SD Times
SOFTWARE DEVELOPMENT
The Industry Newspaper for Software Development Managers

DECEMBER 1, 2004
ISSUE NO. 115

A BZ Media PUBLICATION $7.95
www.sdtimes.com

Grand Central Exposes APIs In Business Services Network

Single sign-in simplifies security situations

BY EDWARD J. CORREIA

With the release of Business Services Network 2005 in late October, Grand Central Communications Inc. has exposed all the functionality of its integration-as-a-service network, following the hugely successful example of Web services pioneers such as eBay Inc. and Amazon.com.

eBay currently conducts about 1.3 billion auctions per year, and according to Ron Palmeri, Grand Central's executive vice president of product and corporate development, "35 percent are done through their APIs," he said.

Palmeri said that by exposing functionality in this way, Grand Central is allowing its interfaces to be woven into the business processes of partners,

▸ continued on page 19

Most integration projects live in a 'pay and pray' world, says Minor.

Solaris 10 Free; Sun Gets Closer To Open Source

Adds 64-bit *x*86 compilers, new Java tools aimed at better collaboration

BY YVONNE L. LEE

Sun Microsystems Inc. announced last month that its Solaris 10 operating system will be free of charge when it is released on Jan. 30, 2005. The company also announced it will release an open-source version in the first quarter of next year.

Comparing Solaris to the open-source Linux operating system, Sun CEO Scott McNealy said, "The only thing you can say is we haven't open-sourced it. We will fix that next quarter." Details regarding such issues as licensing, governance and the specific software that will be made available still were not finalized, however.

President Jonathan Schwartz said offering an open-source version of Solaris is intended for the academic community and other researchers, who would innovate on the operating system. In addition, hardware manufacturers would be able to create drivers more easily.

The company plans to create a community process similar to the Java Community Process, said Schwartz. Solaris 10 can be downloaded now for noncommercial use.

Rumors had circulated that The SCO Group, which owns at least some rights to the Unix operating system, might not permit Sun to release the code to its Unix version under an open-source license. SCO, however, says that is not the case.

"Sun has the broadest rights of any Unix vendor out there," said Blake Stowell, a spokesman for SCO. Sun has paid more than US$100 million over the years for those rights, he said. "Because they have very broad rights, there's a lot of flexibility in what they can and can't do."

In the meantime, Solaris 10 will include a new version of Java Studio Enterprise and new

▸ continued on page 19

For nearly every organization, for nearly every developer, the Web has changed everything. The rate of change was driven, at first, by the features that Tim Berners-Lee built into his early World Wide Web model in 1990. But to a greater extent, the wide acceptance of the broad platform that we all use as the modern Web was driven by the creation of the World Wide Web Consortium in October 1994, and by the unifying influence that the W3C has brought to this nascent paradigm over the past decade.

The Web consists of a number of disparate individual applications running on the Internet, which is itself a number of disparate interconnected networks. Those applications provide a number of services. Web applications started as simple static pages containing text and hyperlinks, delivered by TCP/IP-enabled applications that could provide those files upon a GET request by a Web client. The Web, of course, has evolved since then in ways that nobody would have imagined, from embedded graphics, animations, client-side scripting, server-side scripting, encryption, authentication, application servers, *n*-tiered architectures, XML-based metadata, SOAP calls, Web services and, now, service-oriented architectures.

▸ continued on page 17

A PROCESS FOR SECURING SOFTWARE

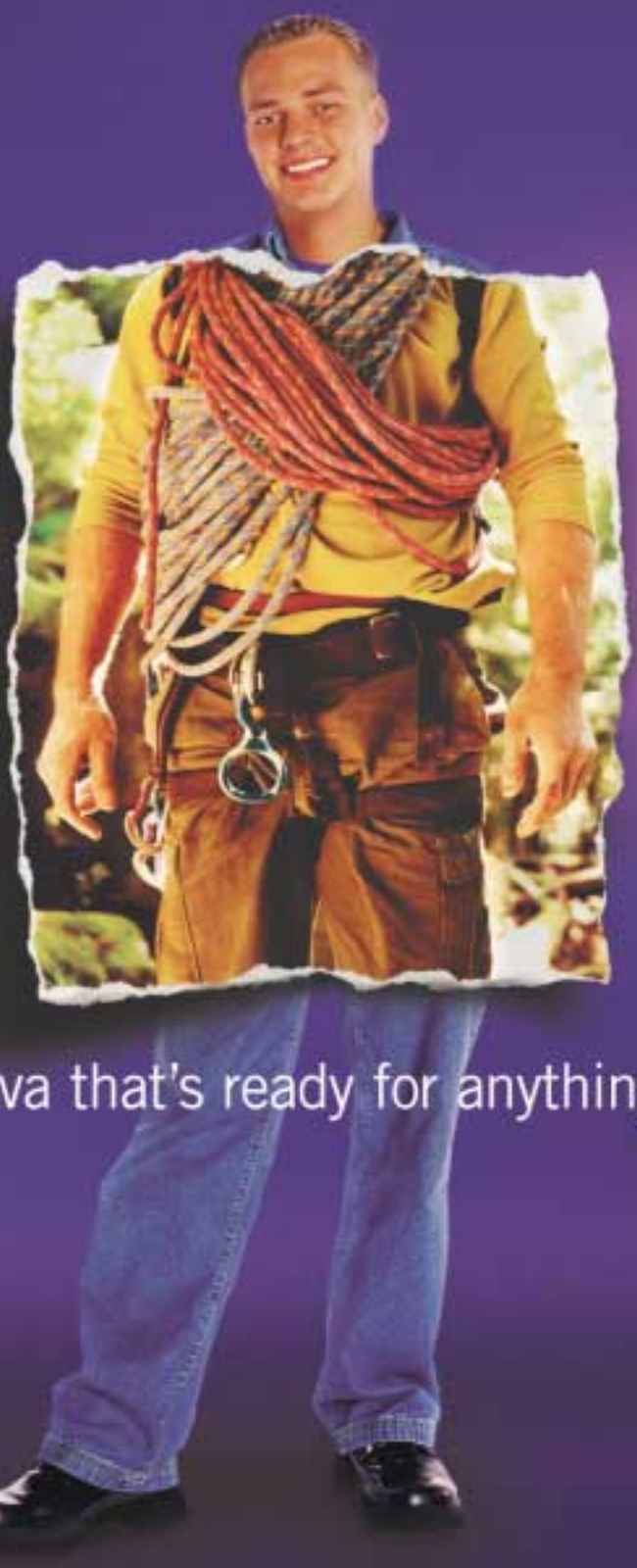
Best practices are a must, company says

BY DAVID RUBINSTEIN

It takes more than tools and tests to secure software from vulnerabilities, according to Secure Software Inc. It takes a process as well.

The McLean, Va., company, founded in July 2001 by security expert John Viega, will launch this month a new suite of analysis tools built for developers, QA testers and auditors.

▸ continued on page 19



Java that's ready for anything.

Borland® JBuilder® 2005, the newest edition of the #1 Java™ IDE in the world. With the most advanced feature set ever, ideal for enterprise-class projects. Complete command and control for JavaServer™ Faces (JSF™), JavaServer™ Pages (JSP™), servlets, Enterprise JavaBeans™ (EJB™), Web Services, Struts, XML, Swing, database applications, mobile applications, and more. Take your next project up to the next level. And enjoy peak performance.

- **Import project source from any IDE or editor • JSF-enables existing Web applications • New distributed refactoring for better teamwork**
- **Customizable code editor with CodeInsight™ and ErrorInsight™ • Two-way visual Struts designer • Supports Apache™ Axis 1.2, SOAP, WSDL, UDDI, and WSIL**
- **JSP™ tag library/framework support • Tight integration with Borland® Enterprise Server, BEA WebLogic™ Server, IBM® WebSphere®, and more**

go.borland.com/j3

Borland®

Open-Source Ingres Beginning to Pay Dividends

FreeBSD, SCO ports join CA's other Linux, Windows editions

BY EDWARD J. CORREIA

Computer Associates International Inc. claims that new clustering and scalability features built into the Nov. 1 release of Ingres 3 put its enterprise database for Linux and Windows on a par with Oracle 9i and Microsoft SQL Server 2000.

Perhaps more interesting is the opening of Ingres source code, a move the company says is already starting to bring unexpected results from the developer community. "We had FreeBSD and SCO [ports] delivered this week," said Emma McGrattan, vice president of development for Ingres, speaking in early November. "We're also looking at a Mac [OS X] port. It's very exciting."

The source, which is available now for Linux and Windows editions at ca.com/opensource, was originally made available to Linux developers in August, a move McGrattan said was intended to engage the community. "We were looking to innovate more and to work with the open-source community to come up with ideas for future enhancements."

She compared the model with that of MySQL AB, whose namesake open-source database is among the world's most popular. "MySQL has proven there's a demand for an open-source database," she said, but hastened to point out a key pricing difference. "If you make money off MySQL, you have to pay a license to MySQL. VARs don't have to pay a royalty to embed Ingres in their application" under CA's trusted open-source license. MySQL is licensed under the GPL.

McGrattan said CA, which had seen profits from Ingres since its acquisition in 1994, plans to make up that revenue with service offerings. "For people putting the product in a pilot, the FastTrack development support option costs [US]$250 per named user per month," she said. Pricing for 24-hour enterprise support starts at $1,995 per server processor per year.

Ingres 3 is available now for Linux and Windows, with Solaris and HP/UX scheduled for release by the end of this year, McGrattan said. Editions for AIX, Tru64 and HP OpenVMS are scheduled for early 2005. ■

IBM Updates Tools to Build Self-Healing Systems

BY JENNIFER DEJONG

Still spreading the word on its "self-healing" systems, IBM Corp. updated its toolkit aimed at developers who want to add such smarts to their own applications.

The company in late October announced Autonomic Computing Toolkit 2.0, which helps ISVs and corporate developers build applications that can diagnose and fix problems, such as poor performance or server failure, without human intervention.

The updated collection of tools lets developers build applications that manage themselves, instead of requiring IT administrators to intervene, said IBM's program director for autonomic computing, Adel Fahmy.

New to the toolkit (www.ibm.com/developerworks/autonomic/overview.html) is support for Eclipse 3.0, as well as for the OS/400 and Solaris operating systems.

The previous version, 1.0, which was delivered in February, covered AIX, Linux and Windows.

Among the tools included in the kit is an autonomic management engine that allows developers to specify events, such as disk usage, that they want to monitor, said Fahmy. By building that capability into the application, when the application is deployed, it can determine, for example, that disk space is filling up and performance is slowing down.

Instead of forcing the IT administrator to pinpoint and fix the problem, the engine analyzes what types of files are being generated and eliminates those, such as old log files, that aren't necessary. "The goal is to develop applications that are more resilient," he said. ■

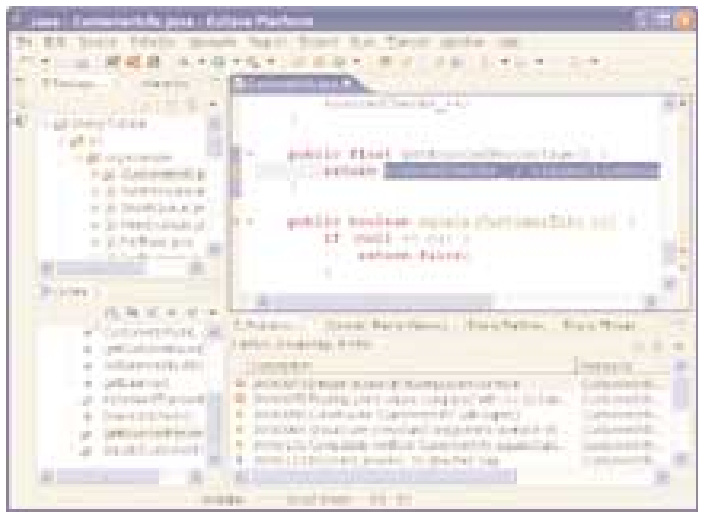
Enerjy: Test Configurations Can Be Changed on the Fly

BY DAVID RUBINSTEIN

The ability to change test configurations on the fly while an application is being profiled, without restarting the application, is being called a "first of its kind" feature by Enerjy Software, which in November released Edition 6 of its Java code analysis and profiler tools. Enerjy is a subsidiary of Teamstudio Inc.

Michael Hamilton, the company's architect of tools, said the new profiling capability built into the Enerjy Memory Profiler and the Performance Profiler lets developers look at different parts of the application while it's running. "You can refocus the attention the profiler is paying to the application" with the simple click of a button, he said. "Having to restart the app server every time you want to look at a piece of an application can be a pain. Those seconds it takes to restart can be excruciating."

The profilers—there also is a Thread Profiler—which can be embedded inside a Java IDE, also now have a status view feature, Hamilton added.



Enerjy Code Analyzer has a new rule priority feature and can be integrated into a development environment.

The company's static code analysis tool, Code Analyzer, has been enhanced with a rules priority feature, the ability to filter sections of a project from the analyzer and integration with Apache's Ant build tool. Hamilton said, "You can go through a configuration and decide, for instance, that javadoc errors are not as important as eclipsing a variable might be."

Also, the reporting feature within Code Analyzer now can let users see which rules were configured to be tested against, which Hamilton said will help developers speed up code reviews. The tools are available for US$295 per tool per developer. ■

News Briefs

NEW PRODUCTS

Dralasoft Inc. is offering **BPEL Orchestrator**, a workflow manager for the Business Process Execution Language. Orchestrator, which is an add-on to the company's Workflow suite, includes a visual designer that can generate WSDL definitions based on process workflow interaction requirements, a runtime engine and a monitoring system . . . Environmental Systems Research Institute Inc. (ESRI) is offering **ArcGIS Data Interoperability**, a new extension to its ArcGIS platform that lets geographic data be shared in a number of formats, including XML . . . BluePhoenix Solutions Ltd. has announced **LanguageMigrator for PowerBuilder**, a code converter that translates PowerBuilder applications to Java. The software, to be released in May 2005, uses an open-source library to implement PowerBuilder-specific system functions . . . Accelerated Technology is offering **Nucleus Cipher Suite**, a stand-alone application that can be invoked over SSL, PPP or SNMP to perform crypto functions for embedded applications. Licenses start at US$4,495 . . . DataSource Inc. is shipping its **Jetson** software, which is designed to create J2EE applications without programming. It will build and deploy code for JBoss, BEA's WebLogic and IBM's WebSphere application servers. Prices start at US$995 and vary according to the number of databases and application servers used.

UPGRADES

AppForge Inc. has updated its cross-platform mobile development system. **Crossfire 5.5** now can target Palm OS, Symbian and Pocket PC using Visual C#. The new version also supports RFID, Pocket PC 2003 Second Edition, and Windows Mobile Smartphones . . . ActiveState has updated its **Perl Dev Kit**. Version 6.0 adds new graphical user interfaces, shared library options and a dynamic DLL loader; it also adds tools for creating MSI installation files. New to version 6.0 is a converter that translates VBScript into

▸ continued on page 15

License Managers Step Up Piracy Fight

BY DAVID RUBINSTEIN

Piracy remains a billion-dollar problem for software companies. A July study by IDC showed that 22 percent of the software in use in the United States is unlicensed. A survey by Ipsos Public Affairs released in October showed that while 9 in 10 software professionals believe businesses can't afford the risk of piracy, nearly 1 in 4 of them say some of the software in use where they work is unlicensed.

In the past month, four vendors—Desaware Inc., jProductivity LLC, Macrovision Corp. and Protexis Inc.—have updated or introduced licensing solutions to help software companies combat piracy.

Version 1.1 of the US$1,495 Desaware Licensing System, for Microsoft's .NET, relies on cryptography built into that framework to manage the distribution of applications, components and Web services, according to Desaware founder Dan Appleman. It provides a customizable algorithm that developers can use to create their own system identifiers and set priorities, he said, to determine if two systems are actually the same in terms of activation.

Also new in this version are samples of how to create a subscription-type model; an obfuscator to prevent reverse-engineering of code; a new license manager application for creating keys and managing applications; and a US$495 single application edition.

jProductivity recently released version 1.2 of its customizable Protection licensing framework to support a variety of licensing models, such as named user and floating. The framework locks the license to a network card MAC address, which "is the only thing in a system that's truly unique," according to CEO Alex Krivov. The system also offers a grace period during which mission-critical applications can continue to function even though the original license has expired, he said. The standard edition, with no floating or named-user models or license activation support, sells for $299, while a Pro edition with those features costs $699.

Macrovision's Update Service 4, made available in mid-November, lets software publishers make IT administrators aware of updates and patches, and to deliver those where they need to go. Also, the company has updated its FLEXnet utility pricing module, which collects and processes usage data for the publisher, who then can see patterns and take advantage of potential business opportunities in a "pay-as-you-go" model.

Protexis last month launched a suite of three hosted licensing modules—for product activation and copy protection, promotional services for registration and trial use, and merchant services for handling credit-card payments, international localization, conversion and taxes. "The idea is to help publishers drive revenue, and you do that by leveraging customer registration data, by sending e-mails to remind users their trial is almost up, and by providing the services they need to transact in an open way, in any channel," said Karl Hirsch, CEO of Protexis. ▮

Digital Evolution Ships XML VPN Device

BY YVONNE L. LEE

Plug it in and have safe, easy transport between Web services and business partners. That's what Digital Evolution Inc. hopes its XML VPN Appliance will do.

"The challenge isn't so much preventing unauthorized access; it's about making it easier for people you want to [have] access to access it," said Ian Goldsmith, vice president of product marketing.

Using Digital Evolution's devices to create a virtual private network (VPN) between business partners that are using Web services means developers don't have to download security libraries and create programs for authorizing access among the partners to the Web services.

To create a Digital Evolution VPN requires using the VPN Appliance at the Web services sender's end, along with a VPN Controller. A second VPN Appliance at the consumer's end is optional, Goldsmith said.

An average configuration will sell for US$75,000.

The XML VPN Controller provides central policy and rights management and transaction auditing services. It is available as a software product for deployment by a VPN provider, or as a hosted solution. The Controller includes delegated management and Web services rights provisioning capabilities. It is the central certificate and key management service for a VPN instance. It also acts as the collection point for distributed audit data gathering and reporting. ▮

AppSight Looks Into Windows Through J2EE

BY YVONNE L. LEE

J2EE and .NET applications have to interoperate, so Identify Inc. in November updated its AppSight performance monitoring application to work in heterogeneous environments.

"Before, we had a system that could look at either a J2EE pure environment or a Microsoft environment," said Lori Wizdo, vice president of marketing.

Identify refers to its software as "black box" technology because just as an airplane's flight data recorder collects information about a flight to decipher what happened following a crash, AppSight is designed to collect all data concerning an application to provide information about why the application failed, Wizdo said.

Specifically, AppSight 5.5 uses agent software to log events happening throughout an application that uses J2EE server software and .NET-based client software, Wizdo said.

AppSight is designed to compete against monitoring programs from Mercury Interactive Corp. and Wily Technology Inc., she said, adding that she believed her company's product added more integration between the two environments.

"A lot of the bigger players have acquired point solutions [for the two environments], so the integration between those solutions is still on the road map," she said. "It's not in the product yet."

Full installations of AppSight 5.5 cost between US$150,000 and $200,000, she said. ▮

Seapine Software™
changing the world of software development

Developers love creating code... Managers crave process control... Bridge the gap with Seapine CM.

Software development is a team effort with developers, testers, and management all working toward one goal – delivering the highest quality product on time.

Built on award-winning TestTrack Pro and Surround SCM, Seapine CM brings structure to source control and issue management, improving communication while accelerating product development.

Seapine CM helps your team...

Define custom change request workflows, putting you in control of who makes changes and who authorizes the closure of issues.

Associate source code changes with defects or change requests.

Gain a thorough understanding of how much work remains before project completion.

View complete audit trails of what changed, why, and by whom.

Understand how close you are to release—how many issues are open, how quickly are you closing them, how many are re-opened?

Successful team-based development requires the proper process supported by the right development tools. Tools that are flexible, easy to use, secure, and scalable–like Seapine CM.

Features:

Complete source code control with private workspaces, automatic merging, role-based security and more.

Comprehensive defect management—track change requests, bug reports, feature requests and more.

Fast and secure remote access to your source files and defects—work from anywhere.

IDE integration with JBuilder, Visual Studio, Eclipse, and other leading development tools.

Advanced branching, triggers, email notifications, fully configurable workflows, and customizable fields put you in complete control of your process.

Open interfaces—triggers, email notifications, SOAP support, XML data exchange, and ODBC clients.

Scalable and reliable cross-platform, client/server solution supports Windows, Linux,

Achieve major improvements in software development performance through better tool integration and process automation. Manage defects, development issues, and change requests with award-winning TestTrack Pro and gain complete control over your source code and change process with Surround SCM. Seapine's integrated change management tools are feature rich, highly scalable, Web enabled, and cross platform. Streamline your development process with Seapine CM and help your team deliver quality software products on time, every time.

Learn more about the Seapine CM suite at
www.seapine.com
or call 1-888-683-6456

Surround SCM Source Control
TestTrack Pro Defect Management
QA Wizard Automated Testing

Software Testing Gets Real at STPcon

BY YVONNE L. LEE

The first Software Test & Performance Conference, produced by BZ Media LLC, will debut Dec. 7-9 at the Hyatt Regency in the Inner Harbor in Baltimore. The event brings together test/QA experts to teach technical classes on the latest techniques being used in the field.

BZ Media is the publisher of SD Times and Software Test & Performance, a magazine launched in 2004 that is moving to a monthly publishing schedule beginning in February 2005.

"This show is for two categories of attendees: senior people who manage the QA process, and test QA managers who want to work better within the engineering process," said conference director Alan Zeichick, who is also editor-in-chief of SD Times.

"The old model that you just wrote software and threw it over the wall to testing doesn't work," he said.

To that end, the conference will feature classes on such topics as agile processes, model-based testing and test-driven development. The classes will be led by testing practitioners, Zeichick emphasized.

The keynote address, "The Ongoing Revolution in Software Testing," will be presented Wednesday at 5 p.m. by Cem Kaner, professor of software engineering at Florida Institute of Technology and director of Florida Tech's Center for Software Testing Education & Research. Kaner is the author of "Lessons Learned in Software Testing," "Testing Computer Software" and "Bad Software: What To Do When Software Fails."

The conference expects to draw approximately 400 attendees, according to Zeichick.

Tuesday will feature full-day tutorials, while Wednesday and Thursday will have a series of 90-minute classes and an exhibit hall.

Online registration is available at www.stpcon.com. The conference also will make available on-site registration for the US$1,195 conference. ▮

Cem Kaner of FIT will present "The Ongoing Revolution in Software Testing" keynote address.

Software Test & Performance CONFERENCE

Dec. 7-9
Hyatt Regency, Baltimore

EXHIBIT HOURS:
Wednesday, Noon-7 p.m.
Thursday, Noon-4 p.m.

TUTORIALS:
Tuesday, 9 a.m.-5 p.m.

CLASSES:
Wednesday, 8:45 a.m.-5 p.m.
Thursday, 8:30 a.m.-5 p.m.

SHOW FLOOR RECEPTION:
Wednesday, 5:45 p.m.-7 p.m.

KEYNOTE:
Wednesday, 5 p.m.-5:45 p.m., "The Ongoing Revolution in Software Testing," Cem Kaner.

www.stpcon.com

Kenneth Iverson, Father of APL, Dies

BY YVONNE L. LEE

Kenneth Iverson, who received the Association of Computing Machinery's Turing Award for creating the APL programming language, died on Oct. 19 following a stroke. He was 83.

He suffered the stroke in front of his computer at home in Toronto on a Saturday evening, and died three days later. His wife, Jean, and other family members were by his side, according to his son Eric.

Iverson received the Turing Award in 1979 for creating APL.

He invented APL in 1962 while he was a student at Harvard. It was an interpreted language designed for array processing.

"Things you would do in C in a page of code, you could do in a line of APL," said Jim Horning, co-chair of the ACM awards committee. "It was both a blessing and a curse. It was a blessing because it was so concise and powerful. It was a curse because if anyone else looked at that line, they'd have a devil of a time figuring out what that did."

The language also was known for the unusual character set it required, which was a combination of mathematical symbols, arrows and special characters. It was necessary to use a special keyboard to write the code.

In the 1990s, Iverson and Kevin Hui wrote the J programming language, a language similar to APL that used the standard ASCII character set.

The family has asked that memorial donations be sent to the bursary fund of the Academy for Lifelong Learning (www.allto.ca), at 59 St. George St., Toronto ON, M5S 2E6. ▮

Software FX Puts Chart FX Right In Your Pocket

Leading charting technology now available for the .NET Compact Framework and Smart Device applications.

Software FX began shipping Pocket Chart FX for the .NET Compact Framework this month. Priced at a reasonable $599, Pocket Chart FX includes most the robust features offered in the full Chart FX for .NET, leaving out only those that are not applicable due to device or platform limitations. Pocket Chart FX is also included at no extra charge to the full version of Chart FX for .NET, priced at $2,699, that includes both Windows Forms and Web Forms functionality.

Pocket Chart FX for .NET is a charting component for rapidly developing applications that extend enterprise data visualization and analysis capabilities to mobile devices. With Visual Studio .NET and Chart FX for .NET, developers can quickly build powerful graphical applications that connect to mission critical data and run on Smart Devices.

"With Pocket Chart FX you can expect a component with the right feature set, portability and memory footprint for your mobile applications."

Pocket Chart FX for .NET provides a design-time experience assembly compiled against the .NET Framework that integrates seamlessly into Visual Studio .NET, allowing you to setup chart attributes and properties easily. This consistency ensures that there are no features in the design time version of the control that will not be available in the run-time version limited to work in the .NET Compact Framework and both assemblies adhere to the "small is good" principle for mobile applications.

As a GDI+ intensive component, Chart FX has been developed with coding practices that help improve screen redraw. This is particularly important when considering mobile applications where memory, CPU speed, and other resources are at a premium. Considering the small screen size of PocketPCs, they've made sure charts display well in a portrait rather than in a landscape orientation and even the default Chart FX color palette has been changed to improve legibility.

Perhaps one of the main advantages Chart FX provides is a consistent API and Object model across all of the platforms supported in their product line, including .NET, COM and Java. This means, developers can leverage their knowledge in a particular Chart FX product to move or port an application to a completely different platform.

As opposed to other vendors which are now providing first-generation offerings of their .NET Compact Framework products, Software FX has been building and offering charting components for Microsoft's mobile environments for over a decade. With Pocket Chart FX for .NET you can expect a component with the right feature set, portability and memory footprint for your mobile applications. Visit www.softwarefx.com ▮

Routing Messages Reliably, Without MOM

Blue Titan offering supports WS-ReliableMessaging spec

BY JENNIFER DEJONG

What happens when Web services require support for reliable messaging, but the corporate network runs over HTTP?

"You have to buy a message-oriented middleware product and integrate it with the rest of the network," said Chris Schin, director of product marketing at Blue Titan Software Inc.

The San Francisco-based company was expected to address this problem last month, announcing Network Director RM, which adds support for the WS-ReliableMessaging specification to Network Director, Blue Titan's HTTP-based "network overlay" for companies that rely heavily on Web services. In the past, such companies could use the HTTP protocol for 80 percent of their messaging needs. But important transactions, such as stock trades, required message-oriented middleware (MOM), said Schin. "What we are doing is taking that step away. You no longer need to buy and integrate a messaging middleware product in order to support reliable messaging."

Authored by BEA Systems Inc., IBM Corp., Microsoft Corp. and TIBCO Software Inc., the WS-ReliableMessaging spec ensures that Web services reach their intended destination—only once, and in the proper order.

'SMART' AT NETWORK LAYER

Made up of SOAP routers, Network Director RM, and Network Director, are designed to transmit SOAP messages over HTTP. But they do more than direct traffic; they also provide at the network layer Web services management features, including performance monitoring, and support for registries and identity management. Such capabilities are typically provided at the client layer, but Blue Titan's offerings let developers "make the service as dumb as they want," said Schin. "We will make it smart at the network layer."

According to Schin, Blue Titan competes with Actional Corp., AmberPoint Inc. and Infravio Inc. (for performance monitoring), IBM, Sonic Software Corp. and WebMethods Inc. (for MOM), Infravio and Systinet Corp. (for Web services registries) and DataPower Technology Inc., Forum Systems Inc., Oblix Inc. and Systinet (for identity management).

Network Director RM, which starts at US$400,000 for four routers (which the company calls "control points"), is aimed at companies adopting service-oriented architecture on a large scale. It's used by enterprise architects and IT administrators, as well as by developers authoring Web services, said Schin. They can cut and paste into Network Director RM (or its predecessor) any Web service written to the Web Services Description Language standard. "Without [support for reliable messaging] you can't do the last 20 percent of an important application" he said. ▮

WS-Discovery Finds Web Services Without the Load of UDDI

BY YVONNE L. LEE

A specification aimed at providing a way for one Web service to inquire about the presence of other services that meet specified requirements without the overhead of Universal Description, Discovery and Integration (UDDI) is set for preliminary testing.

The specification, called Web Services Dynamic Discovery, or WS-Discovery, has been available since late October on the Web sites of the authoring companies—BEA Systems Inc., Canon Inc., Intel Corp., Microsoft Corp. and WebMethods Inc. It will undergo its preliminary testing workshop at Canon's Lake Success, N.Y., headquarters Dec. 6-7.

During this workshop, vendors will implement versions of the early specification and see how interoperability on various Web servers can be attained, Astor said.

"This is not a core spec for the development manager of the Gap," said WebMethods' vice president for standards and platform strategies, Andy Astor. "This will be important to him or her because he or she will purchase a product that implements it."

Although WS-Discovery has a smaller overhead than specifications that require UDDI, Astor said he doesn't believe that it will replace the Web Services directory specification.

"UDDI is a technology that's here to stay and is going to see greater and greater acceptance over the next few years," he said.

One advantage of WS-Discovery is that developers can search for another Web service and specify its requirements directly from within the Web service, Astor said.

Following the workshop at Canon, the companies will accept discussion and opinion on the specification. It will then be submitted to a consortium, most likely OASIS or WS-I, Astor said. This can take from "weeks to months," he said. ■

Allora 4 Works Without Script

BY EDWARD J. CORREIA

Among the major features in Allora 4, Hit Software Inc.'s relational-to-XML-mapping tool released in late October, are support for stored procedures, script-free transformations and the ability to generate Java code without a Java IDE.

According to Ale Gicqueau, Hit's XML technology evangelist, XML documents can now be generated from stored procedures, not just from database tables and views as before. The new version also can now perform a database table look-up during transformations. "This allows code to be translated on the fly to new values defined in a look-up table," he said, a task he said required scripting in the previous 3.6 version. A new wizard-driven code generation tool creates executable code for bidirectional XML-to-RDB transformations.

The US$2,990-per-seat tool also now includes enhanced XML schema support. A deployment license costs $3,990 per server processor. ■

Optimized for
Microsoft Visual Studio .net

But it works on my machine...

With Wise it will work on theirs too

What you expect from the installation authoring experts:

- Create desktop, server, Web and mobile installations
- Industry's best .MSI and .NET Framework support
- Quick-to-master installation authoring environment
- Support for advanced technologies: SQL Server, ASP.NET, C#, VB.NET, XML Web services, no touch deployment and more

What's new – only from Wise:

Ensure optimum installation reliability with Wise's installation management technology:

- Diagnose and fix potential conflicts *before* your application's release
- Understand exactly how your application will be affected by the production environment's configuration
- Manage the complexity of installation resources by storing components in a centralized repository – accessible by all developers – regardless of location

Download your free evaluation at **http://evaluations.wise.com** and receive the free installation management whitepaper: *"How to build reliable installations for complex environments."*

BUILD RELIABLE INSTALLATIONS FOR COMPLEX ENVIRONMENTS WITH WISE FOR WINDOWS INSTALLER®

DevTest Combines Test Planning, Management

BY YVONNE L. LEE

Test management tools need to be easier to manage, according to TechExcel Inc., so it has included planning and scheduling along with script creation and test creation in its DevTest tool, released in late October.

It competes against Mercury Interactive Inc.'s Test Director and Rational Software Corp.'s Test Manager, said Jason Hammon, senior product manager.

It works on Windows servers running IIS, although it supports both a stand-alone and Web-based client. However, the software can integrate with automated software testing tools that test on Unix or other platforms. When DevTest works with this software, it schedules the tests, but the other software performs them, Hammon said.

It performs the customary tracking functions of listing task ID, names, the assigned tester, platform and status, and keeps tabs on how much time it has taken to complete the task. DevTest also has charting and graphing capabilities, which Hammon said are useful in planning for future test sequences.

DevTest comes in three flavors: a stand-alone version, an integrated version and a Web client. The stand-alone version, which starts at US$695 for a single user, can plan tests and track the progress of tests. The integrated version, which starts at $890 for a single user version, can with the company's DevTrack software search for defect names, and can edit information from DevTrack. DevTest Web is $2,000.

In addition to combining the various test scheduling and recording functions, DevTest integrates with TechExcel's DevTrack product, so that it can automatically generate bug reports, which in turn can be tracked when the test fails, Hammon said. ■

DevTest includes reports that can be used for further test planning.

News Briefs

MORE UPGRADES

◂ continued from page 5

Perl. Pricing for the PDK ranges from US$145 to $199.95 . . . Accusoft Inc. has released an upgrade to its **ImageGear Professional** imaging toolkit. Version 14 of the US$3,995 library introduces the ability to edit Adobe PDF files and use the new Captive Image and Scanner Interface Specification, or ISIS-based devices. It also works with the TWAIN 1.9 scanner standard. The library works with Linux, Mac OS X, Unix and Windows . . . Version 5.5 of **EiffelStudio**, an Eiffel language IDE from Eiffel Software Inc., includes a faster compiler, docking facilities for plug-in tools, an improved debugger for .NET, and implementation of new features in the Eiffel language. The company says that passive support for users new to the language is available on its Web site . . . FileMaker Inc. has revised its **FileMaker Pro 7** and **FileMaker Developer 7** database tools for Windows and Mac OS X. FileMaker Pro 7 v3 has improvements in text editing, layout editing, scripting, calculations, portals, value lists, import/export, find, spell-checking, security and Japanese language functionality. FileMaker Developer 7 v3 has changes to the script debugger, text editing, layout editing, scripting, calculations and portals.

PEOPLE

GASSÉE

PalmSource Inc. has appointed **Jean-Louis Gassée** as its chairman of the board, replacing **Eric Benhamou**, who resigned in October. Gassée is a general partner with Allegis Capital, and is well known as the founder of Be Inc. and former executive of Apple Computer Inc. . . . Electric Cloud Inc., a company that offers high-speed build servers, has promoted co-founder **John Graham-Cumming** to chief scientist; he had been VP of engineering. That post will be filled by **Anders Wallgren**. ■

Internet Time

Dec. 1990

Tim Berners-Lee demonstrates his World Wide Web browser and a line mode browser, which provide access to hypertext files, CERNVM "FIND," and Internet news articles.

1990

The World (world.std.com) goes online, becoming the first provider of dial-up Internet access.

1991

World Wide Web, HTTP, UDIs (now URIs), HTML published.

1992

The number of Web servers had grown from one to 50; term "surfing the Internet" is coined by Jean Armour Polly.

Jan. 1993

Three X Window browsers and a CERN Mac browser become available.

Feb. 1993

NCSA releases first alpha version of Marc Andreesen's Mosaic for X.

March 1994

The National Science Foundation rescinds the Acceptable Use Policy prohibiting commercial use of the Internet.

March 1994

Andreesen and most members of the Mosaic development team leave to form Mosaic Communications Corp., later Netscape Communications Corp.

Oct. 1994

W3C founded.

Aug. 1995

First version of Microsoft's Internet Explorer released.

Oct. 1996

First W3C recommendation, PNG, established.

Jan. 1997

HTML 3.2 recommendation released.

Feb. 1998

XML recommendation released.

May 1999

Web Content Accessibility Guidelines released.

Jan. 2000

XHTML released.

Feb. 2000

Authoring Tool Accessibility Guidelines released.

Nov. 2000

DOM level two recommendations released.

Dec. 2002

User Agent Accessibility Guidelines released.

June 2003

SOAP 1.2 released.

July 2004

Berners-Lee awarded OBE in recognition of the Web's influence.

2004

Web Ontology Language and RDF for the Semantic Web released.

One-Way Links Were Key to Web

Berners-Lee's 'Christmas present' unlocked potential

What started out as an experiment in a research lab turned out to be a holiday present for businesses and everyday people. As the Web moved from the realm of an experimental network of research institutions to one used commercially, rules had to be established so the Web wouldn't fragment into multiple mini-Webs.

Hypertext had existed for decades, but with previous systems the links had to be bidirectional, requiring permission from both parties, said World Wide Web Consortium (W3C) spokeswoman Janet Daly. World Wide Web creator Tim Berners-Lee had the bright idea of creating a system that could link any item on the Internet by naming it. On Dec. 25, 1990, Berners-Lee demonstrated his system, which consisted of HTML, the HTTP transport and URIs. In addition, he demonstrated his own server and browser.

"Tim's twist on hypertext systems was to allow one-way," said Daly. "It was absolute heresy to hypertext programmers in 1990."

The specifications for this system of free linking were made public in early 1991. The freely available specifications, together with the National Science Foundation's rescinding its policy of prohibiting commercial use of the Internet, spurred interest in the Web, Daly said. However, with the commercial interest came fragmentation. "Netscape or the predecessor of Netscape, NCSA Labs, started introducing custom tags with their browser," Daly said.

"Vendors were taking Tim's original HTML and making it better in their own eyes," said Steve Bratt, the W3C's chief operating officer.

The World Wide Web Consortium tried to lay out Web specifications and to ensure that there would be a single unfragmented Web, said Daly.

"The goal was to make sure they all followed and interpreted the standard," she said. One caveat about the W3C's specifications, called recommendations, is that they are just that, pointed out Molly Holzschlag, member of the Web Standards Project, an advocacy group that attempts to encourage W3C compliance by browser makers. "ISO, for example, is a standards organization with a full compliance set that if not met, well, products don't ship, period," she said. "With a true standard, compliance is mandatory." On the other hand, vendors

Credit Web for Open-Source Explosion

Standard network eased collaboration, fueled its own growth

Without the Web, open-source development could not have become nearly as widespread it is today. And vice versa.

Think about it. The first public release of the open-source Apache server in April 1995 was deemed a huge success, and is by far the dominant HTTP server on the Web, according Netcraft Ltd., which tracks Internet infrastructure. Open source powers the Web; the Web fuels open source.

According to one of Apache's pioneers, Brian Behlendorf, the Web might be quite different today had it not been for the open-source efforts of a small team about 10 years ago. "Like gravity and the Big Bang—I don't know that one could have succeeded without the other." Behlendorf is founder and CTO of collaborative software solutions vendor CollabNet Inc.

Behlendorf was among the original eight developers that built Apache, which started as a collection of patches and bug fixes for HTTP daemon 1.3, developed by the National Center for Supercomputing Applications (NCSA), at the University of Illinois. In February 1995, httpd was world's most popular server; a year later, that spot belonged to Apache.

"The idealistic notion was to create a reference implementation of the [Internet Engineering Task Force's] HTTP spec that would be available to everyone, even Microsoft or Netscape," he said. The belief was that if a high-performance reference implementation was available, there would be no excuse not to comply with the HTTP protocol, he said, "because most of the excuses of noncompliance to standards usually involve difficult or impracticality of development or time constraints."

And Behlendorf said that from a practical standpoint, the presence of a standard also guarantees a level playing field. "Most importantly, there isn't a single entity that owns the client and the sever."

Behlendorf said that prior to the Web, open-source developer collaboration was done through e-mail. "As the Apache group got under way, we set up a CVS tree, which gave us a repository for source code and acted as a time machine to allow us to roll back changes and see who made what changes."

Next came a Web-based bug database, which he said effectively tracked open issues and kept the team focused on what needed to be done next. "That mentality, the collection of tools and making them work well together [became] the premise for CollabNet," Behlendorf said, of the company he founded in 1999.

Also founded that year was SourceForge.com, an open-source repository and developer collaboration site now owned by VA Software Corp. The site, which currently boasts more than 90,000 projects, offers free hosting and advanced features on a monthly or annual subscription basis.

Jan Liband, director of software marketing at VA, recalls software development before the Internet. "Back then you had sneakernet. Now someone at any moment can go into a central repository and check in, check out, see how popular something is, who's working on it, and contribute thoughts, ideas or move the project along. You couldn't have done that without a network."

In those early days, he said, software projects were frequently scattered across many different areas. "Early computer hobbyists shared code with tapes and punch cards. If you wanted to recruit experts, you had to go to 24 different places."

Liband agreed that the success of open-source and the Web are intimately intertwined. "They grew together and provided synergies to each other; you couldn't have one without the other." ▮

can choose to ignore a W3C recommendation, which will lead to incompatibilities.

"The other things that got W3C started were Tim wanted to have a meeting place that would have the same functions as the IETF. As the IETF serves the Internet, the W3C serves the Web," said the W3C's Daly.

While most noted for laying out the HTML- and XML-related specifications, the W3C actually released the portable network graphics (PNG) specification first, in October 1996, three months ahead of the first stable HTML release, HTML 3.2, Bratt said.

The other surprise most people discover is how quickly XML followed the HTML releases, said Bratt.

"People think about XML coming out way after HTML, but the first XML was 1998," he said. Bratt called XML the W3C's most important specification for business applications.

Bratt cited the W3C's accessibility initiatives as being as important as the technical standards because they make Web pages open not only to users with different kinds of needs, but also to different kinds of devices.

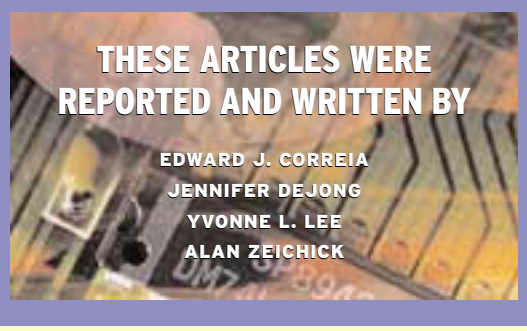
Down the road, Bratt said he believes recommendations for mobile Web applications and for the Semantic Web are in the vanguard.

The Mobile Web recommendations deal with how devices can relay information about their capabilities, such as screen size, the kinds of audio they can accept and the kinds of user input devices attached.

"This is something that seems to be a growth area now," said Bratt. "I think Japan and Europe are ahead. Probably North America may be in third place. What's lacking is global standards."

The Semantic Web, the group's most recent venture, seeks to overlay the current Web with information about the meaning of data contained on a page.

"You can imagine in the Semantic Web building new tools to browse the Web, to add semantics, to add workflows," Bratt said. ■



Web-Based Development: A Giant Step Forward, Small Steps Back

New technologies emerge; old ones are new again

Almost no one saw it coming: how the World Wide Web, which appeared on the scene as a giant, online information source with a universal front end, would turn enterprise application development on its head.

"In the early days, developers were dismissive of the Web," said Tim O'Reilly, founder and CEO of computer book publisher O'Reilly Media Inc., in Sebastopol, Calif. To many, the Web's arrival was like the introduction of the PC. "It looked like a toy. But in reality it was a whole new paradigm."

A decade after its 1994 debut, the Web has not only emerged as the programming platform of choice, but also as a central integration hub from which to connect to widely dispersed data and applications, virtually none of which was designed with the Web in mind. "Most people didn't see even a small portion of the possibilities to come," said former Novell Inc. CEO Bob Frankenberg, now chairman of tools maker Kinzan Inc., in Carlsbad, Calif. "Initially, [the Web] was a means of giving lots of people access to information—very little else."

'Most people didn't see even a small portion of the possibilities to come.'

—Bob Frankenberg, chairman of Kinzan Inc.

The Web's transformation from online resource to integration platform owes its success to a host of new and old technologies and a willingness on the part of key technology vendors to commit to a common set of standards. Led by the W3C, vendors committed to moving things forward in a pragmatic way, recalled IBM Corp.'s Bob Sutor, director of WebSphere foundation software. "There was one breakthrough after another, each building on top of the other," he said, noting the arrival of HTML and HTTP (in 1994), XML (in 1997) and SOAP and Web services (in 2000). "It's remarkable the progress that has been made."

TWO STEPS BACKWARD

The move to Web-based application development also entailed some steps backward. "A lot of programmers didn't like the browser," said Frankenberg. "They had gotten used to fat clients."

The browser took application development three steps forward in terms of accessibility, and two steps backward in terms of usability, added Randy Heffner, an analyst at Forrester Research Inc.

Tim Huckaby, CEO and co-founder of .NET consulting firm InterKnowlogy LLC, in Carlsbad, Calif., said, "We are just now beginning to talk seriously about smart Web clients," as well as developing tools that overcome the limitations of technologies such as HTML. "Many of the coolest productivity features in Visual Studio 2005 are around automating HTML," he noted.

Web development has also brought to fruition technologies that have been long talked about but not widely adopted. Sophisticated Web applications forced the use of middleware, making three-tier development a reality, not just something client/server developers building large applications grappled with, said Gary Barnett, an analyst at London-based Ovum Ltd.

The application server greatly simplified the task of creating the middle tier and linking to databases and back-end applications essential to completing transactions. But until the past two or three years, many e-business efforts weren't actually automated, he said. "Users filled in Web forms, which were e-mailed to people who rekeyed the information into back-end systems."

True integration—the ability to take Web apps and fuse them with other applications and businesses without getting people involved—is "distinct from any enterprise development we've seen before," noted Microsoft Corp.'s Scott Guthrie, a product manager for ASP.NET. "To a traditional client/server developer, who built Win 32 apps that talked to a database, that ability to hop from app to app is remarkable."

Web development—and its current emphasis on Web services and service-oriented architecture (SOA)—has also re-ignited a longstanding discussion about software reuse. "The ability to create reusable components, and place the application logic above them, has evolved [the Web] to way more than just an integration platform," said Novell's Frankenberg.

Going forward, the next phase is about putting in place the technologies and standards that will ensure the Web applications are secure and reliable enough to carry out business without human intervention, said IBM's Sutor. "When a Web app is moving $10,000 between accounts, you need to know that it got there." ■

Ten Years of the World Wide Web

◂ continued from page 1

None of this would have been possible without standards. None of this would have been possible without those standards being driven by a vendor-neutral organization. And none of this would have been possible if companies like IBM or Microsoft had had ownership or control over the emergence of those Web standards, or if any commercial entity had been able to levy royalties or transactions fees. With the Web, interoperability has always been the name of the game. Without interoperability, the Web revolution wouldn't have happened.

That's not to say that the revolution has been an unalloyed success, even on the Web. While many companies use the Web to reach out to employees, customers, partners and suppliers, other people use the Web for less charitable ends. Clever coders have learned to exploit standards to hack into Web sites, or to use compromised Web sites to hack into end users' PCs. Because the Web has become prevalent, it has entered the domain of consumer electronics—but without the simplicity and reliability that the broad market requires. Clearly, there's much more work to be done.

And more work *is* being done, most of which impacts developers and is being impacted by developers. The Web affects everything. The software we write uses the Web to enable new applications or integrate old ones. We use the Web to write software collaboratively. We do business on the Web. The Web is even largely responsible for the modern success of open-source software, enabling projects to be launched, developers to contribute to them, and for source code and binaries to be distributed.

The Web, of course, is only one of many applications that run across the Internet. Many Internet users started with e-mail or telnet; even today, many other services like instant messaging and videoconferencing are non-Web applications that use the Internet. But it's the Web, standardized by the W3C, that fueled the dot-com boom and which continues to fuel the revolution.

All that in 10 years of the W3C. It's been quite a decade. We can't wait to see what comes next. ■

Perforce SCM.

Piece your global development team together.

Perforce Software Configuration Management brings you and your team together - wherever you happen to work.

[Fast]

[Scalable]

[Distributed]

You've got developers in Tokyo, Denver and London collaborating on your project. Your UI designer is in Austin and your QA team is in Cupertino. SCM nightmare? No. Just another day's work for Perforce.

Perforce Proxy, part of Perforce's multi-site solution, brings files to remote users on demand and caches them locally for other users at the same location. Local caching guarantees quick response times for remote users while maintaining real-time access to project activity and status information.

Unlike replication solutions with their inherent administrative overhead, a Perforce multi-site solution recovers files automatically, reduces the load on the Perforce Server, and requires no remote backups.

Fully integrated into Perforce's client/server architecture, Perforce Proxy requires only TCP/IP connectivity. A single Perforce Server can support any number of Perforce Proxy sites, allowing developers all over the world to collaborate.

PERFORCE
SOFTWARE

Download a free copy of Perforce, no questions asked, from www.perforce.com. Free technical support is available throughout your evaluation.

Secure Software Stresses Best Practices

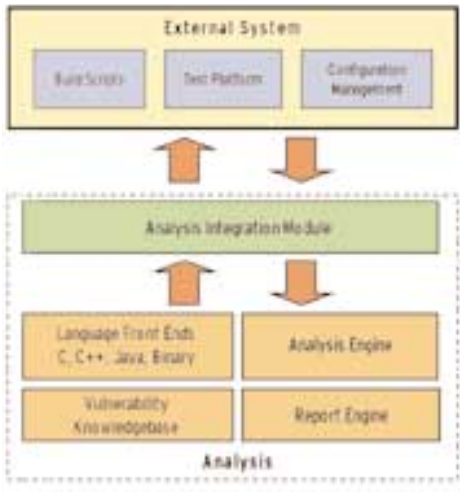
◂ continued from page 1

Two products, CodeAssure Workbench and CodeAssure Integrator, will be available by Dec. 15, according to Dale Gardner, director of product marketing. CodeAssure Auditor and CodeAssure Management Center are expected to be released in the first part of next year, he added.

But according to Viega, a key feature that separates the suite from other security analysis tools is the inclusion of a set of process components that make up the company's Comprehensive Lightweight Application Security Process (CLASP), designed to identify and formalize the best practices organizations can use to provide value from a security standpoint. When the process is completed, Viega said it will be released to the industry; he hopes that it will be adopted as the de facto standard best practices for eliminating security vulnerabilities in applications.

CLASP is being created to help organizations define what needs to be done to ensure application security. It also divides up the security work based on roles within the development and deployment life cycle, helping to ease implementation of these practices without forcing organizations to change the way they work, Gardner said.

On the tool side, CodeAssure Workbench is being released as an Eclipse plug-in for now, Gardner said, to analyze C, C++ and Java code, with additional language support expected in next year's 2.0 release. According to Viega, the tool takes source code or a binary module and translates it to create a language-neutral model, with all the functions, control flows and variables. Then a control-flow analysis of the program is performed, looking for such things as buffer overflows, the order of standard API calls, and about 40 other broad classifications of vulnerabilities.



Source: Secure Software Inc.

Secure Software hopes its analysis method will become an industry standard.

Viega added that when doing a risk analysis, CodeAssure tools can differentiate between buffer overflow types, for example, with a Security Adviser feature built into the interface. An outgrowth of CLASP, Security Adviser explains the error found in code and offers recommendations for fixing it, as well as helping the team determine the severity of the problem. "If it comes from the network, it's serious," he said. "If it's an internal overflow, it's probably not a security breach." This helps teams prioritize repair work.

CodeAssure Auditor is used to look at binary programs such as Windows executables, while Management Center provides Web-based access to metrics across an entire organization as well as some reference information, Gardner explained. "Applications can be monitored over time, to see if things get better or worse, and that information can be used to define security policies," he said.

CodeAssure Integrator integrates the analysis engine into build systems and test tools for building a test environment, while a language pack provides a language parser, translation and knowledge base support. The suite is sold on a per-seat basis, according to Gardner, who said a typical installation runs between US$50,000 and $100,000. ▮

Solaris 10 to Be Set Free

◂ continued from page 1

compilers.

Java Studio Enterprise 7 includes integrated collaboration so that developers can send instant messages to one another when they have questions as they are building their projects, said Joe Keller, vice president of marketing for Java Web services and tools.

"As we see groups are becoming more and more geographically dispersed, you have more and more workgroups that need to interact," he said. Keller described the new collaboration as "instant messaging and chat capabilities in a code-aware way," such that all parties see not only the messages, but the same lines of code simultaneously.

Java Studio Enterprise 7 also adds UML tools and performance monitoring.

Sun's tools cost either US$5 per employee per year or $1,895 for a flat perpetual seat license.

In addition to the updated version of Java Studio Enterprise, Sun is shipping new C, C++ and Fortran compilers that have been optimized for AMD's 64-bit Opteron processors.

"These optimizers rival any in the industry, including those from the chip makers themselves," said Keller. "If you're using an open-source compiler, you're paying a huge tax, you're wasting almost half your machine. I call it the gcc tax. We have a tax break for you." ▮

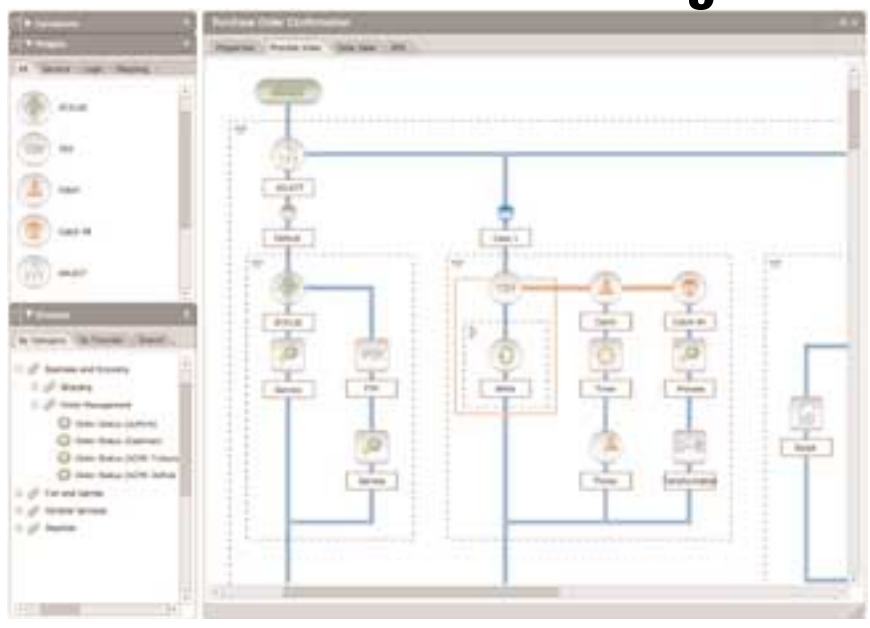
Grand Central Exposes APIs of Its Web-Based Integration Network

◂ continued from page 1

customers and suppliers. "Now, anything you can do through [our tools], you can also now do through our APIs and access the full capabilities of our infrastructure through Web services."

Grand Central's uncommon business model offers companies the infrastructure to integrate with customers and vendors on a pay-as-you-go basis; there are no upfront costs. "We live in a pay-and-pray world," asserted CEO Halsey Minor. "Organizations pay huge amounts of money for hardware and software and hope at some point in the future to recoup that in some form of benefit." But the sad reality, he said, is that most software projects end in failure. "And the more expensive they are, the more likely they are to fail."

Free Grand Central tools include Process Designer, a browser-based design tool—enhanced and renamed in version 2005—for building integrations between a company's applications and those of its partners, or modifying those for ADP, SalesForce.com, Yahoo and dozens of other ERP, CRM, finance, human resources and e-commerce end points. "You only start paying when you start generating transactions and you become successful," Minor said. "That's the end-state of a normal hardware-software deployment in an enterprise, but the beginning-state of our platform." If a company's transaction payload remains less than 25MB per month, the service remains free. Beyond that, first-tier pricing starts at US$1,000 per month.



Grand Central's drag-and-drop integration tool is built by DreamFactory Software Inc.

Another significant advance in 2005, according to Palmeri, is an enhanced LDAP directory service with federated identity management, which Palmeri said greatly simplifies authentication management. "Today the developer is required to manage all of the user credentials and authentication methods and protocols on a point-to-point basis. [Our service] deals with the nuances of how the end point itself operates," he said, so that from the developer's perspective, all end points look the same.

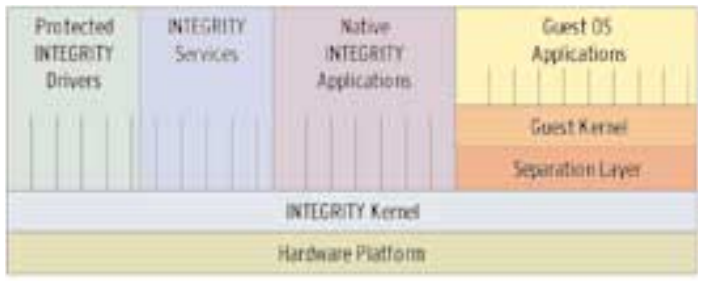
The service also now includes integrated error handling, with consistent error definitions across all connectors. "Now it's a standard aspect of how connectors work and all error handling is built-in." Prior to this, Palmeri said developers were forced to write ad hoc error handling into their own code. "This takes a huge percentage of the grunt work [out] of connecting to an end point; it strips away all the authentication and error handling and provides that as part of the service."

The directory also permits companies developing connectors to share them more easily with other Grand Central users. "eBay, PayPal or SalesForce.com developers can build something and advertise it broadly for others to use and consume," Palmeri said. Companies also have the option to keep their connectors private, such as a link between their human resources department and payroll administrator ADP, he added. ▮

Green Hills Seeks to Protect Linux, Windows

BY ALAN ZEICHICK

SANTA BARBARA, CALIF. — At its second annual technology conference here, Green Hills Software Inc. unveiled Integrity PC, an add-on to its Integrity real-time operating system that can run other operating systems, such as Linux or Windows. The benefit of this wrapping process, according to the company, is to minimize the damage caused by rogue applications or hack attacks against those operating systems.



Source: Green Hills Software Inc.

Integrity PC adds security to a guest operating system by restricting I/O.

The Embedded Software Summit, a press-and-analyst event produced by Green Hills, was a venue for the company to bash competing operating systems, specifically embedded Linux, Microsoft's Windows and Wind River's VxWorks, and also the Eclipse 3.0 integrated development environment, on a wide range of themes, ranging from performance and reliability to ease of use. The company also used the venue to promote its own products, particularly the Integrity RTOS and Multi integrated development environment, and to announce Integrity PC.

Integrity PC is a separation layer that emulates the hardware platform's I/O devices and isolates the "guest" operating system, according to Mike Wolf, Green Hills' general manager for advanced products. The guest operating system runs as an application above that abstraction layer; the company demonstrated Linux running on a PowerPC board while introducing Integrity PC, but Wolf said that other operating systems, including Windows and VxWorks, can also be run as guests on top of Integrity PC.

Guest operating systems are protected, Wolf said, by restricting I/O. For example, the underlying Integrity RTOS could be configured to act as a network firewall, allowing the guest operating system to communicate only with specific IP addresses or over specified TCP ports. That would limit the possibility that the guest operating system could be attacked by other machines across the network—or that if it were attacked, it would be able to then attack other systems beyond those it was already allowed to access.

Wolf claimed that this approach is better than configuring a network firewall function within Linux or Windows itself, because an internal firewall might be bypassed or corrupted by an attack.

More than a firewall, the underlying Integrity RTOS could also restrict other I/O channels, such as disk access, according to whatever policies a company's developers cared to implement. Development licenses for Integrity PC cost US$15,000, and there are no royalties for deployment.

What's more, if the guest operating system crashes, the underlying Integrity RTOS remains running. A watchdog can detect if the guest crashes and reboot it, or logs can be used to analyze the failure. The company demonstrated that even if Linux, running on top of Integrity PC, hangs, Green Hills' Multi debugger can be used to identify what happened in real time.

According to Wolf, Green Hills developed Integrity PC to meet a specific requirement for one of its customers, Boeing. But Wolf made no attempt to hide that the company's real goal isn't to support other embedded operating systems, but to encourage its customers to migrate from them to Integrity. "If it's a mission-critical application that you're running on Linux or Windows, then shame on you," he declared. ▮

ObjectFX Puts J2ME on the Map

SpatialFX adds location-based intelligence to mobile apps

BY EDWARD J. CORREIA

If a picture is worth a thousand words, how many lines of code would that be? Helping answer that question is ObjectFX Corp., maker of SpatialFX, a set of Java class libraries that it claims enable developers to add location-based visualizations and data to enterprise applications.

The company in late October released SpatialFX Micro Edition, bringing the same functionality to handheld computers and other resource-constrained devices.

CEO Barry Glick explained that his company's tools could be used to improve the efficiency of applications running in a trucking company, which might have many different types of vehicles with varying capacities and material-handling capabilities. "Plus, each customer might have their own windows of opportunity for drop-off based on business needs. It becomes critical to have the power of location be harnessed for addressing decision-making, increasing efficiency and reducing cost," he said.

SpatialFX tracks assets in the field using input from GPS systems or cellular networks and feeds that data back to enterprise applications. "Now an enterprise can integrate location information into a whole range of business applications, for managing assets and people that may be mobile, and dealing with customers in different locations," Glick said.

The SpatialFX Micro Edition libraries cost US$4,000, and include maps that can be integrated as a visualization component inside apps and add spatial attributes. A small per-device license charge also applies, with monthly, annual or perpetual fee schedules, all volume-dependent.

Glick said that SpatialFX competes with ERSI, a giant in the geographic information systems market, as well as with Microsoft's MapPoint.NET service, despite what he said are extreme differences between the two. "We offer a product to developers; MapPoint.NET is a service that can be used to get locations, maps and routes as a Web service on demand. They're really attacking more of MapQuest's market than an integrated enterprise market."

Available now, SpatialFX Micro Edition can work in client/server or Web-based application environments, or can be used to develop stand-alone applications for handheld computers and other occasionally connected mobile devices that can be synchronized with a back-end system when necessary.

Glick said that aside from requisite memory, which varies by application, the only device requirement is a JVM, but added that GPS capability is helpful. ▮

Map data helps applications be more efficient, says ObjectFX.

To Trolltech, Qtopia Is a Single Input Stack

BY EDWARD J. CORREIA

While it might seem perfectly natural for a cell-phone user to alternate between touch-screen and keypad for input, combining the two interfaces programmatically is actually quite difficult to achieve.

So says Trolltech AS, which claims to have done just that with Qtopia 2.1, the latest version of its graphical user interface environment for Linux-based cell phones and handheld computers, released on Nov. 9.

"Symbian Series 60 phones use a button-based user interface," said Haavard Nord, Trolltech's CEO, speaking of a competitive operating system used in many smart phones. "But if [Symbian developers] want a pen-based interface, they normally go to UIQ," another software stack and API that creates applications not compatible with Series 60. "Porting is required between Series 60 and UIQ."

In addition to the obvious advantage of simplicity when combining multiple capabilities into a single API, Nord said it gives developers the ability to create a single binary application that can run on devices that use either keypad, touch-screen or both. "It was quite a tricky thing to do, [but] we've been able to combine them into one stack. This also makes it easier [for users] to get third-party applications for a device."

Qtopia 2.1 can now perform handwriting recognition in any part of the screen, rather than being restricted to a dedicated region. "This makes the device more usable," he claimed. "For example, just by starting to input the first couple of letters of a contact, it lets the user look up [the contact] much faster."

Royalties for Qtopia 2.1 range between US$2 and less than $1, depending on volume. And thanks to some code tuning, Qtopia now installs in about 5MB of flash, which Nord said is down from 5.5MB of the previous version. "This makes it possible to put Linux and Qtopia on a phone with 8MB flash memory using very inexpensive hardware, and still leaves another 1MB for apps, and 1MB to spare for user data."

The software also now supports MMS, over-the-air configuration, GPRS networking and the ability to use UI themes, the latter of which enhances what Nord claimed is another of its key competitive advantages over Palm OS, Symbian OS and Microsoft's Mobile operating systems. "We allow the developer to completely rewrite the user interface. Established platforms do not offer that freedom." ▮

GET THE RIGHT BACK-END FOR YOUR FRONT-END

If your back-end database isn't a good match for your front-end development, you need a new database.

Caché is the *post-relational* database that combines high-performance SQL for faster queries and an advanced object database for rapidly storing and accessing objects. With Caché, no mapping is required between object and relational views of data. That means huge savings in both development and processing time.

Applications built on Caché are massively scalable and lightning-fast. Plus, they require minimal or no database administration.

More than just a database system, Caché incorporates a powerful Web application development environment that dramatically reduces the time to build and modify applications.

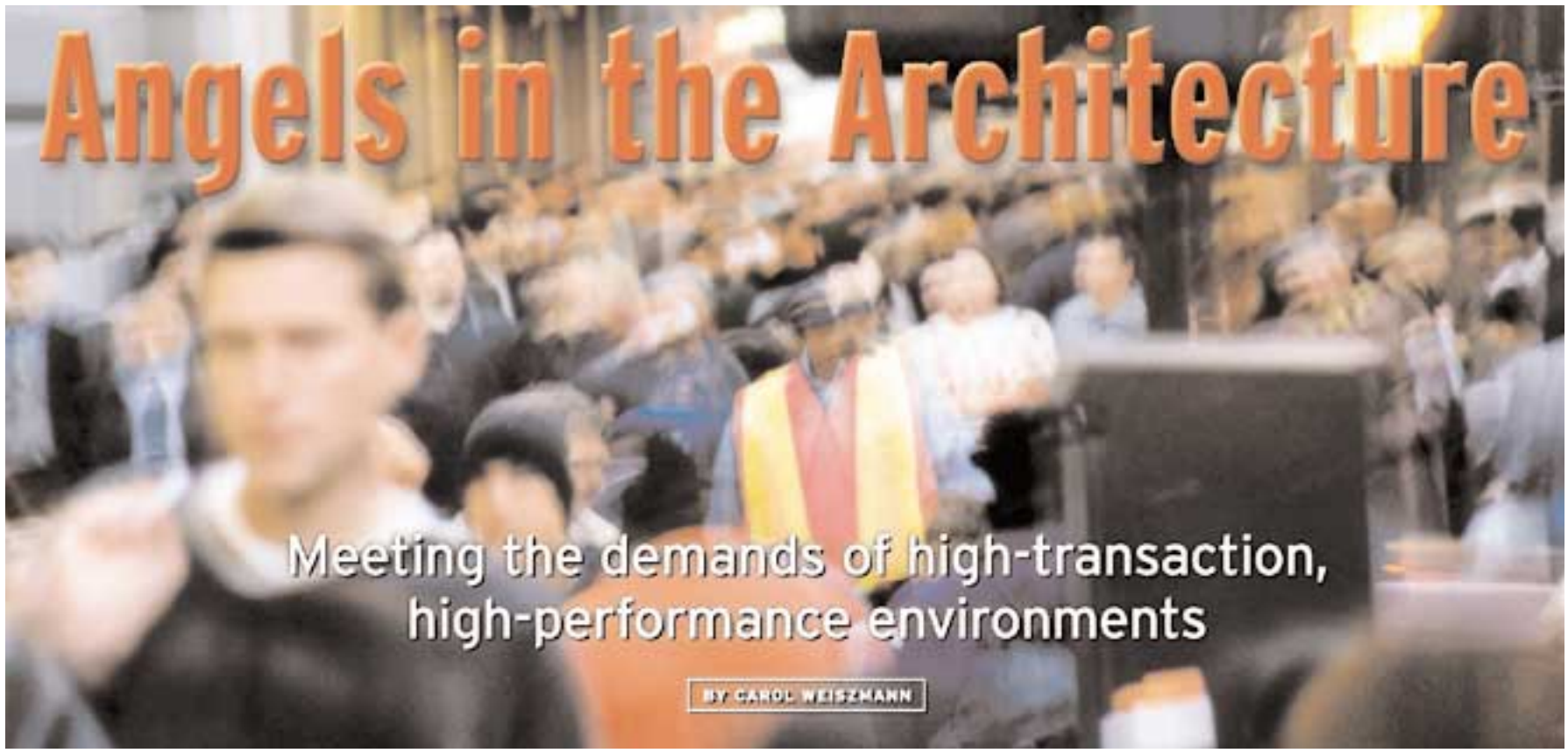
The reliability of Caché is proven every day in "life-or-death" applications at thousands of the world's largest hospitals. Caché is so reliable, it's the leading database in healthcare – and it powers enterprise applications in financial services, government and many other sectors.

We are InterSystems, a specialist in data management technology for over twenty-six years. We provide 24x7 support to four million users in 88 countries. Caché is available for Windows, OpenVMS, Linux and major UNIX platforms – and it is deployed on systems ranging from two to over 10,000 simultaneous users.

InterSystems CACHÉ
Make Applications Faster

Try a better database. For free.

Download a free, fully-functional, non-expiring version of Caché or request it on CD at www.InterSystems.com/match6



Angels in the Architecture

Meeting the demands of high-transaction, high-performance environments

BY CAROL WEISZMANN

These days, just about all applications need to pull data from multiple sources, and do it quickly, to complete transactions or deliver up meaningful, usable information. For companies that conduct business online, performance pressure is especially intense.

Consider Ameritrade Inc., which provides online brokerage products and services for self-directed investors: Clients are guaranteed that a marketable order will get done in five seconds or less. The volume can be staggering: as many as 350,000 trades per day, requiring well over a million transactions to complete.

Plus, this transaction demand does not flow steadily. "A significant amount arrives at market open and market close," said Ameritrade chief information officer Asiff Hirji. "It's very, very spiked and peaky."

eToys Direct Inc. (which operates etoys.com) contends with a different kind of peak: the Christmas season, when volume jumps 10- to 20-fold from other times of the year. During the holiday season, noted Web services director Mick Lester, the firm's Web site handles as many as 5.2 million page requests per day, which can peak at 210,000 page requests per hour.

So how do developers build cost-effective systems and databases that can maintain exacting performance levels and very fast response times while contending with huge peaks in (ever-growing) transaction volumes?

It begins with the architecture. "If you are dealing with high-volume, high-transaction-flow systems," said Hirji, "one of your starting premises has to be that a lot of this must be done without ever touching the database."

For Mike Kirschner, vice president of IT business services at Office Depot Inc., performance is best achieved via a service-oriented architecture (SOA). "By that I mean loosely coupled systems based on open standards—discreet components or services rather than monolithic applications," he explained.

HORIZONTAL SCALABILITY

Ameritrade, too, is service-oriented; applications are distributed over "hundreds and hundreds of servers," said Hirji. "To scale those applications, you simply add more servers." Developers no longer need to think about how much hardware is needed to deploy an application.

This approach presents some challenges, however: how to distribute transaction flow across various servers, how to know which server is handling which transaction, how to spot when there's a problem with a server. Ameritrade has found several solutions:

Communicating asynchronously. "Design so that a module sends the message but keeps working, aware that it's still waiting for a response and able to react if it doesn't get a response after a certain amount of time," said Hirji.

Leveraging guaranteed message-delivery capabilities in development platforms like JBoss. The runtime environment will guarantee that if one module sends a message to another, it will be received, so developers don't have to write all that messaging control logic and can focus on the application logic instead.

> *'The need to scale is ingrained in everything we do, from technology to people.'*
>
> *—Chris Cummings, chief information officer at eToys Direct Inc.*

Deploying a publish-listener (also called publish/subscribe) structure for much cross-module communication. "For instance," Hirji said, "we have a piece of code whose sole job is to do nothing but receive quotes from the marketplace for all securities and broadcast these internally to our transaction processing modules. Each module listens, but it only listens for the pieces of data that it's actually interested in at that moment."

There are a couple of other things to watch out for as well.

"You need a high level of skills in the folks designing your services," said Office Depot's Kirschner. "You must get those services defined correctly because they all have to work together. Instead of building one large application, you're building a hundred small, flexible and extendable applications and trying to string them all together—it's more complex and your design must be better upfront."

He also warns about the need for a more granular approach to monitoring transactions. "In the past," he said, "you'd look at just one monolithic application and ask, 'What's my response time?' Now, you're looking at a hundred little components and asking, 'What's my response time with each one of those?'"

GOING STATELESS

"If everything is stateless," said Kirschner, "load can be spread across anywhere from two to 2,000 servers. When a developer writes a stateless component, he doesn't care if it's for two or 2,000—it's not his problem. Creating the necessary server farm is a problem for the operations people."

This, he said, enables him to leave database scaling to the vendors (his firm uses DB2, SQL Server and Oracle, among others), who are regularly adding features and capabilities like clustering, workload management and database partitioning. "I'm finding if I do my applications correctly and stay with a good proven vendor, the database layer kind of takes care of itself as long as I'm doing the basics—getting indexes on tables, optimizing my SQL statements, having database administrators that know how to put the databases onto physical devices."

At Ameritrade, there's less reliance on database vendors. "We're one of the few in the industry that owns and builds the platform from end to end," said Hirji. "None of our clients come to us because we use Oracle or DB2. They come for our proprietary systems and software. So it's up to us to make sure the application is efficient as possible."

How? "We try to do away with the database," Hirji explained, "and get to the point where, for interim state transitions, the transaction flow is actually stateless—so if the thing crashes, it can actually recover fairly quickly."

Thus Ameritrade avoids the performance penalty resulting from putting interim state transitions of the transactions into the database. Instead, the interim state transitions are stored in physical memory on the server and committed to the database only when the transaction is complete.

The result, Hirji said, is reduced latency and higher throughput. "You're basically optimizing for the server and the processor that you've got, as opposed to the database," he said. Additionally, he said, it's easier to recover from failure, and costs are lower thanks to more modest database investments.

Ameritrade is migrating much of its database infrastructure to open source. "For a lot of things we do," said Hirji, "we don't need some of the bells and whistles that come with today's databases" such as DB2 and Oracle.

▸ continued on page 24

Best Practices for High-Transaction Environments

BY SUSAN MESSENHEIMER

Here are some best practices gleaned from Ameritrade Inc., Auctiondrop Inc., eToys Direct Inc., Mobliss Inc. and Office Depot Inc.:

Hire the right people. Auctiondrop CTO Andy Jeffrey said the right people are key to building quality systems. "We've hired people who have experience with high-volume, high-transaction systems for large retailers or secure transactional systems for financial services companies."

Design for high availability. "This means that for each component you need at least two servers that can be included and removed from the application flow at will," said John Avery, CTO at Mobliss. "So the process is: Direct all traffic to server 1, update server 2, point all traffic to server 2, update server 1, direct traffic to both 1 and 2."

At Auctiondrop, separation of functionality helps. "When we add functionality to our processing center, it's not going to impact our customer-facing stuff and vice versa," Jeffrey explained. "For the customer-facing stuff, we typically do a live upgrade that won't impact the customer because we'll segment systems so that some are still running the old stuff as we add new stuff to what's offline, then bring what's offline back online and take off the other systems."

Build in the ability to shut down gracefully. "If you don't consider this early in the design, it's easy to paint yourself into a corner," said Avery. "Just killing the process is not the best approach. Applications need to make sure that intermediate queues are emptied or persisted before shutdown."

Use small, reliable, highly interchangeable modules. "When something works, use it wherever you can," Avery advised. "Only create a new module if the currently available ones can't meet your need, especially when it comes to tool components."

Avoid/reduce interdependencies. "Software should isolate critical functionality," Avery said. Developers need to consider reducing interlibrary (jar file) dependencies, and whether problems in the logging/monitoring system could or should bring down the whole application. They also should consider such things as intermediate queues, if certain modules can occasionally have long response times.

Keep your software lean. "The reason all the pipes and electrical conduits are visible in the hallways of a battleship but not a cruise ship is to facilitate easy monitoring and repair, even while under attack," Avery said. When it comes to software, this means reducing the number of wrapper classes and layers of APIs. "Code," said Avery, "should be thin and in your face." Beware of wrapper application programming interfaces (APIs) that hide layers where problems may lurk.

Employ stored procedures judiciously. "It's possible today to build almost any application completely inside the database with stored procedures," Avery said, "but my experience is that doing so is generally a mistake." Why? Because when your database maxes out, everything suffers, he explained. Instead, Avery advised scaling horizontally by adding application servers.

Yet stored procedures have their place. "There are great performance economies that you get by doing some things in stored procedures," Auctiondrop's Jeffrey pointed out. "You need to think through it before you just say, 'This goes in the database tier and this goes in the app tier.'"

Tune, tune and tune again. "We're constantly investing effort in performance tuning the Web servers and app servers," said eToys Direct CIO Chris Cummings. "And we make sure our database server is highly tuned from a physical database standpoint, a file system layout standpoint and a query performance standpoint."

Use a buddy system. At Ameritrade, programmers are paired: One person has primary responsibility for writing the code, the other is the sounding board and sanity checker. "What that creates," said Ameritrade CIO Asiff Hirji, "is a lot better code."

Tighten the development loop. "Our typical project is somewhere between six and 10 weeks long," said Hirji. "We don't do multimonth, multiyear things because we're convinced everyone is useless at estimating in technology. There are just too many unknowns." ▮

Angels in the Architecture

◂ continued from page 23

Office Depot's Kirschner said he tries to leverage open standards and open-source products as much as possible, though he warned that it's important to make sure there's adequate support.

DRAWN TO SCALE

"The need to scale is ingrained in everything we do, from technology to people," said Chris Cummings, eToys Direct's chief information officer. 'We think about doing everything in really, really large volumes. Not just the Web site, but also the order management system, the financial system, the warehouse management system, the customer service system."

Techniques used in support of scalability include:

Caching, to reduce hits to the database. "We use BlueCoat edge cache servers that do caching of HTML pages based on the URL, and Akamai serves up all our image requests," said Cummings. "This is probably the single biggest factor in our ability to scale because when [the holiday] season hits, the number of searches goes up dramatically, and most page requests are cacheable. We also do distributed caching, more for performance than scalability."

Auctiondrop Inc., which helps consumers sell goods on eBay, also relies on caching. "There are many different types of caching that we'll do," explained Andy Jeffrey, chief technology officer and cofounder. To sustain an ability to process tens of thousands of queries and transactions per day, Auctiondrop uses data caching, bringing content into memory and keeping it there to reduce database hits. The company also uses rich content caching, which puts into memory not only images and text that are often used and little changed, but also more complex user interface elements—so these don't need to be rebuilt.

Database connection pooling, to control the number of database connections that are active at one time. During its 1999 start-up, eToys Direct struggled with connections to its database. "It's easy to throw Web servers out there," said Cummings, "but when each of those servers needs to connect to the database, and the number of database processes starts exceeding a thousand or so on a server, you run out of memory and you go into a major tailspin."

The solution? "Reliable, scalable database connection pooling," he said. "We solved that in our custom Web server environment by deploying a custom Java database connection-pooling application on our application server layer. We can scale to thousands and thousands of Web server client processes, and those processes can share a more limited number of database connections."

Load testing, to ensure systems can handle the peaks. "A critical part of being ready for the volume growth is to test in advance that we can really handle it," Cummings said. "So we use an external vendor, Keynote, to stress our systems. Our goal is to stress them to roughly double what our highest projected sales plan is, to make sure that we're ready for pretty much anything. It's essential that we prove our performance capability before peak season, including integration points between systems—every integration has to be tested for performance. If we don't and something happens during peak, you can't deal with it because the volume never slows down enough to get your head above water."

DEALING WITH THE DATABASE

Large, monolithic databases make people like Cummings nervous. "We've broken the database out and partitioned it into different application uses," he said. "We've got one primary transaction database that takes care of shopping carts and checkout on the Web site; we have another that handles customer service activities, and we've got a couple of lighter-weight database boxes that handle query-only product requests."

eToys has also moved to smaller hardware, although it still uses a large Sun 6500 server. "We had big boxes at one stage," said Lester, "and we decided to go more with the small pizza boxes—Apache, Linux. If one dies it's not the end of the world, whereas if you're relying on a big box and it fails, you've potentially lost a third of your architecture."

Auctiondrop's Jeffrey added: "We've separated our database into customer-facing, transaction-processing systems—you separate those wherever possible so you can keep the transaction processing very lean and mean and very fast—and back-end reporting and analytic systems, which are offloaded onto another system. In effect, we've fine-tuned that customer system to be sort of a racecar database."

'Now that you have the best database in the world, the next rule is: Use it as little as possible.'

—John Avery, chief technology officer at Mobliss Inc.

Jeffrey acknowledged that this approach adds some overhead, since it requires applications to locate needed data and make sure it's in the appropriate place at the appropriate time. "But you solve those issues once," he said, "and then you have the luxury of saying, 'Ah, we can keep what the customer needs over on the customer side and we can keep what back-end processing needs on the processing side.'"

Mobliss Inc., a provider of mobile media and marketing services, receives thousands of text messages per second. Chief technology officer John Avery has a rule of thumb for keeping things humming: "Spend most of your money and resources on your database solution—hardware, software and talent. No matter what else you do, the database will always be the critical component in your system. Now that you have the best database in the world, the next rule is: Use it as little as possible." ▮

December 7-9, 2004

Software Test & Performance CONFERENCE

Hyatt Regency on the Inner Harbor, Baltimore, Maryland

ttend The So w t Performance Conference

- How to test yo mplei high-level Inter roto
- When, where and how to get the greatest benefit from load testing
- Best practices for aging test autom throughout the life cycle
- How to appl Oriented Pr improve sof and simplif
- Ways to im of offshore
- Take the stres
- Techniques for identifying and mitigating the risks of software defects
- How to avoid classic mistakes implementing Model-Based ing
- ow-overhead ways your software
- your testing to in the develop-
- ecurity testing
- s global teams,

There's Still Time!

Register Now

www.stpcon.com

SPECIAL KEYNOTE
CEM KANER

"The Ongoing Revolution In Software Testing"

p or exhibits
ion, contact
nna Esposito
415-785-3419
desposito@bzmedia.com

Platinum Sponsor: MERCURY

Gold Sponsors: empirix, LogiGear, Agitar

Silver Sponsors: COMPUWARE, Intellisys Technology

Media Sponsors: CM Crossroads, queue

Produced by: BZ Media, SD Times, Software Test & Performance

n.com www.stpcon.com ww pcon.com www.stpcon.com

EDITORIAL

Sun's Critical Launch

On Nov. 15, Sun formally launched Solaris 10, the next version of its Unix-based operating system. The launch caps the company's whirlwind evolution:

There's the new OS itself, which is the company's first to target the new 64-bit *x*86 platform pioneered by AMD's Opteron chips, but now also embraced by Intel's latest Xeon processors.

There's Sun's aggressive pricing for its server and desktop software, as well as for its development tools.

There's the company's price-driven hardware strategy, claiming to beat Dell's prices for low-end rack-mount commodity servers, including auctions of servers on eBay.

There's its continued investment in desktop applications running atop a Linux stack.

There's the continued push into embedded markets, such as smart phones and RFID.

There's the newly updated development tools suite based on its NetBeans open-source project.

It all adds up to an ambitious sweep that is reminiscent only of one other company—Microsoft. The comparison is a natural one: Both companies own their own operating systems, both own their own managed runtime environment, and both own their own tools platforms. And both management teams are seemingly only interested in participating in multivendor industry initiatives if they can control the process and the results.

There's a big difference, of course: Microsoft is financially healthy, able to support its many initiatives with ease. Sun is not. Microsoft is immensely profitable, awash in an ocean of cash, and has a market cap of US$325 billion. By contrast, Sun continues to lose money, albeit at a slower pace than before, and its market cap has shrunk to US$16 billion. The company is placing many bets, and it's unclear how long it can continue to invest aggressively in so many initiatives.

Given the number of projects under way at Sun, it's easy to overlook the importance of Solaris. No other operating system can span the company's entire range of hardware, particularly its high-margin enterprise server. Thus, for Sun to continue pushing its big boxes, developers and systems administrators must embrace (or continue to embrace) Solaris.

Sun certainly has given customers good reason to use its operating system. The company has built nearly every conceivable high-availability feature into Solaris 10, focusing on stability for both the underlying infrastructure and its applications. The new version continues a strong focus on security, including mainframe-like secure containers that isolate individual programs.

To go back to the previous comparison: While Microsoft clearly is the stronger company, Sun's platform holds the trump cards in regard to scalability and security. With Redmond's next server operating system years in the future, the Solaris 10 launch gives Sun its best chance to attempt to regain lost ground and revitalize its faltering fortunes.

Sun's leaders, Scott McNealy and Jonathan Schwartz, need to play those valuable cards extremely carefully over the next several months. The Solaris 10 launch gives them a rare opportunity to turn their company around.

Sun may not get another chance. ▮

Tying the Art to Its Business

If you are in business today, you are in software. Regardless of whether you're in consumer goods, health care, pharma, telco or defense, you're in software. If you turn off the bits, you turn off the lights. Therefore, the world's leading organizations, regardless of industry, are seeing the need to "get good at software." They are focused on driving business benefit from software, throughout their organizations, and right to the bottom line.

Software engineering, the process by which software is built, is more closely connected with business success and competitive differentiation than ever before. As businesses and development organizations strive to align software with business objectives, they are also struggling to squeeze more value from their existing IT investments to drop to their bottom line. Business leaders are relying on their IT staff to create the right infrastructure that will not only save money, but will allow them to better serve customers, protect assets and position themselves to take advantage of "the next big thing."

So software engineers are in the enviable position of controlling their own destiny, and that of their companies, right?

Not so fast. While it is true that software creators are godlike in their ability to turn bits into business applications, they unfortunately are forced to practice their craft within the confines of a development process that is subject to significant external forces that severely threaten their success and overall value to the organization. Today's software engineers are often doomed for failure before they even start a project due to a software delivery process clogged by ever-changing business requirements, conflicting priorities and poor project management. It is a process crippled by a lack of visibility into and across projects and a minimal understanding of the development process by operational managers.

A recent report by The Standish Group provides a glimpse as to just how inefficient today's software delivery process is. It found that nearly one-third (30 percent) of all software projects are canceled prior to completion. Of those projects that are completed, more than half (54 percent) exceed budget, 90 percent are delivered late, and two-thirds are considered unsuccessful, even though they met the functional business requirements.

Imagine if similar statistics were attributed to an automobile manufacturer or home builder. We'd all still be traveling by horse-drawn carriage and living in tents. No need to worry, it is only our global economy's infrastructure that we're attempting to build.

Success in software delivery has become an art form, mastered only by the very skilled and experienced software managers and developers. In most companies, development teams are working against all odds, in a never-ending battle against schedule and budget constraints.

Business leaders turn to their software experts to solve the most pressing business problems but often don't arm them with the guidance, resources or tools they need for success.

TIME FOR CHANGE

To overcome these challenges, it is necessary to transform the very way many software development organizations operate. The time has come for the software development process to be transformed from its current chaotic art form into a managed business process; turning the lens on the art itself so software experts can do unto their own delivery process what they have so eloquently done for manufacturing, human resources, customer relationships, procurement, finance and IT operations over the past 20 years. The software engineering discipline is a great example of the "Cobbler's Children." We have worked our magic to solve the problems of others, but haven't done enough to help ourselves.

I've held many of the roles within the development process, from business analyst to developer to vice president of application development to heading up a company's product portfolio. From this experience, I can see firsthand the challenges that our discipline faces. Most companies today are hindered by gaps between organizations, by gaps between the roles in the development process, a serious lack of communication between stakeholders, and increasing platform complexity.

The gaps between organizations and roles in the software delivery process are the primary reason behind today's lack of IT and business alignment. Often, this lack of alignment causes different teams to have uncoordinated and often conflicting priorities and objectives. It can also result in a reduced level of visibility, communication and collaboration between teams and individuals, which leads to suboptimal execution. The recent increase in outsourcing and off-shoring only serves to amplify the problems created by these gaps.

Add to this the heterogeneous environment inherent to almost all enterprises. The number and complexity of today's technical platforms continues to have major impact on schedule, quality and cost. Existing tools do not sufficiently shield developers from the extreme level of complexity exposed by these technical platforms, and consequently it is often difficult to find, fund and train the skills necessary for successfully delivering today's composite business applications.

Software teams can no longer work in silos. They have to more effectively communicate with the various lines of business they serve, as well as with the operations team. A great piece of software is only great if (a) it's used, and (b) it delivers value back to the business.

Software managers and decision makers need to find a way to gain a more significant level of visibility into their software portfolio and increase control over execution. This is true at the macro level (i.e., what project should get funded and why), right down to the micro level (i.e., what cost/impact will this one little change make to the overall cost/schedule/quality of the project and is it worth it?). Finally software teams must effectively handle increasingly complex distributed platforms that are the foundation for enterprise computing. And it's only

going to get more complex.

What is the role for software engineers in all this? To unleash the power of software creators, we must first debunk three myths that plague software development today:

Myth No. 1: Software development is a mature engineering discipline, on par with mechanical and civil engineering.

Reality: Software development is still evolving and still seeking to match the precision, predictability and measurability of its kin.

Myth No. 2: Software development is only about the bits.

Reality: No developer wants to work on a project that does not add value to the organization. They must be the *right* bits, or else what's the point?

Myth No. 3: Software development is unique unto itself, different from all other managed business processes.

Reality: Software development is unique but also remarkably similar to other complex business processes, such as manufacturing—disciplines that have created processes and tools to increase predictability and success.

Software engineers must be vigilant in making software delivery a core competency of their organizations. Those that do will be rewarded through their ability to identify and capture opportunities ahead of competitors, shorten production cycles, decrease project risk and cost, and increase the overall quality and business value. Only by tying the art to the business it serves, will the software engineering discipline get the credit it deserves. ■

Boz Elloy is senior vice president of products for Borland Software Corp.

Letters to the Editor

IE TOO ROOTED IN OS

In responding to Jeff Duntemann's "By Invitation" piece in the Nov. 1 issue ["The Lessons of Software Monoculture," page 28, or at www.sdtimes.com/opinions/guestview_113.htm], where should I start?

For starters, the failings in IE stem mainly from the fact that Microsoft has always valued features over security. Service packs don't sell, new OS and application versions and upgrades do.

Another reason is that to thwart the efforts of legislation and the DOJ, Microsoft has rooted IE so deep and in such complexity into the OS to introduce all kinds of security hazards. It has become a fibrillose cancer extending its shoots to numerous parts of the OS. What kind of methodology favors this over modularity?

Shouldn't a user application such as this be more isolated from the OS? And shall we talk about the notoriously dangerous ActiveX technology? How comfortable are you with giving some component free rein, even if it seems to be from a trusted source?

Saying that IE is a victim of its own success disregards the fact that the Apache Web server has some 66 percent market share and has a much better track record than Microsoft's offering, IIS.

If, on the other hand, monoculture is the main factor, I expect to see dual-platform worms that infect IE and Firefox interchangeably, as well as Linux.

But I'm not holding my breath.

Laurent Somers

As both a Windows and Linux administrator and a former Microsoft contractor, I found Jeff Duntemann's argument appealing. I also found it to be dangerously reassuring to the Windows Administrators in the crowd.

JD asserted that the vulnerability in IE is due to its market share: The biggest target takes the most hits. That's true as far as it goes. But even if Mozilla had a 90 percent market share, it wouldn't be half the security risk that IE is. That's because Moz is an application. IE isn't. It's part of the Windows kernel. When Microsoft built IE into the kernel to realize the performance benefits that the user community demanded, it recklessly opened the largest single security hole in computing history.

The fundamental issue that Jeff failed to address is as follows: In Linux or OSX or any other OS, when your browser has a bug, you patch the browser. With IE, you have to patch your whole operating system, which turns every "buffer overflow exploit" into a stampede to resecure your enterprise. For a home user this is maddening and annoying. For the business community, with potentially tens of thousands of desktops, laptops and servers to patch, it becomes intolerable.

C/C++ aren't going away soon: They're too good at what they do. Mature operating systems understand the bifurcation of kernel space and user space. My most cherished wish is that my former employer would "get the memo" on this issue before their empire is irreversibly eroded by their competition.

R. Marshall Webber

SIMPLIFIED APIs

Disclaimer: I am owner of a small consulting company that works closely with Microsoft. I am biased.

I really wonder how Andrew Binstock got the impression that APIs will be "changed" with future releases of the Windows system, resulting in a massive effort to rewrite existing solutions ["The Faithful Spouse," Nov. 1, page 33, or at www.sdtimes.com/cols/integrationwatch_113.htm]. Current plans only call for the introduction of new APIs, while still supporting current technologies.

I personally think that the sole addition of new—and possibly simplified—APIs is actually a good thing, and Mr. Binstock used to share the same opinion a year ago when he called for new and simplified APIs in J3EE: www.sdtimes.com/cols/integrationwatch_089.htm.

In general, it seems to me that Mr. Binstock had some kind of personal agenda when writing the Integration Watch column for the current issue as it is hardly supported by facts.

Ingo Rammer

WHAT DO YOU THINK?

SD Times welcomes feedback. Letters should include the writer's name, company affiliation and contact information. Letters become the property of BZ Media and may be edited for space and style.

Send your thoughts to feedback@bzmedia.com, or fax to +1-631-421-4045. Please mark all correspondence as Letters to the Editor.

How Much Will Your Company Invest In Customer Relations?

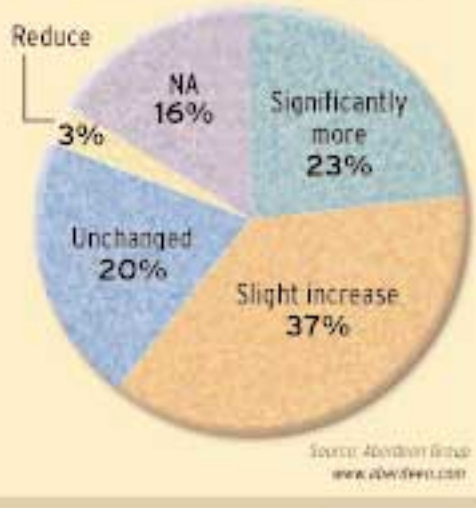
DATA WATCH

Enterprise developers building software for their companies' sales departments might soon be getting a pay raise. According to the report "ERP in Small and Midsize Businesses," published by Aberdeen Group in August, customer relationship management will represent the largest spending area for applications by small businesses in the next two years.

Driven by the need to reduce operating costs, the overriding strategy shown by the midmarket enterprise has been toward attaining and keeping customers, the study found, and investments in CRM solutions will be critical to that effort.

The study, which included 232 companies with annual earnings of up to US$500 million, showed that about 60 percent plan to increase CRM spending over the next 24 months, and nearly a quarter plan to devote what the study called significantly more of their income to the tools; spending amounts were not specified. Only 3 percent plan to decrease CRM spending from levels of previous years.

Interestingly, the study showed that only about 10 percent of small companies develop their own CRM solutions. Of the remainder, 29 percent, by far the largest segment, use Microsoft products, including that provided with its Axapta ERP tool.



SD Times
SOFTWARE DEVELOPMENT
Software Development Times
December 1, 2004 – Issue No. 115

Publisher
Ted Bahr
+1-631-421-4158 x101 • ted@bzmedia.com

Editor-in-Chief
Alan Zeichick
+1-650-359-4763 • alan@bzmedia.com

Editor
David Rubinstein
+1-631-421-4158 x105 • drubinstein@bzmedia.com

Senior Editors
Edward J. Correia
+1-631-421-4158 x100 • ecorreia@bzmedia.com
Jennifer deJong
jdejong@bzmedia.com

Associate Editor
Yvonne L. Lee
+1-408-255-1153 • ylee@bzmedia.com

Copy Chief
Patricia Sarica
psarica@bzmedia.com

Art Director
Mara Leonardi
mleonardi@bzmedia.com

Art/Production Specialist
LuAnn T. Palazzo
lpalazzo@bzmedia.com

Columnists
Andrew Binstock
abinstock@pacificdataworks.com
Allen Holub
allen@holub.com
Larry O'Brien
larryo@thinkingin.net

Contributing Writers
Alyson Behr
Shari L. Gould
Lisa Morgan
Esther Schindler
Susan Levi Wallach

Advertising Sales
Southwest U.S.
Julie Fountain
+1-831-476-1716 • jfountain@bzmedia.com
Northwest U.S./Canada
Paula F. Miller
+1-925-831-3803 • pmiller@bzmedia.com
Southeast U.S./Europe
Jonathan Sawyer
+1-603-924-4489 • jsawyer@bzmedia.com
Northeast/North Central U.S./Canada
Charlie Shively
+1-508-893-0736 • cshively@bzmedia.com
Advertising Traffic
Phyllis Oakes
+1-631-421-4158 x115 • poakes@bzmedia.com

Director of Events
Donna Esposito
+1-415-785-3419 • desposito@bzmedia.com

Director of Circulation & Manufacturing
Rebecca Pappas
+1-631-421-4158 x103 • rpappas@bzmedia.com

Office Manager/Marketing
Cathy Zimmermann
+1-631-421-4158 x108 • czimmermann@bzmedia.com

IT/Web Administrator
Gene De Libero
gdelibero@bzmedia.com

Customer Service/Subscriptions
+1-866-254-0110 • service@bzmedia.com

Accounting
Viena Isaray
accounting@bzmedia.com

Article Reprints
Lisa Abelson • Lisa Abelson & Co.
+1-516-379-7097 • fax +1-516-379-3603
lisa@abelsonreprints.com

BZ Media
BPA WORLDWIDE

President
Ted Bahr
Executive Vice President
Alan Zeichick
BZ Media LLC
7 High Street
Huntington, NY 11743
+1-631-421-4158 • fax +1-631-421-4045
www.bzmedia.com • info@bzmedia.com

OSGi: Java's Client-Side Container

Eclipse 3.0 contains an important architectural innovation that distinguishes it from previous releases: the use of a standardized Java plug-in framework, called OSGi. Before getting into what it is and why it's important, let's examine the reasons Eclipse architects made this change to begin with.

As many of you know, the Eclipse IDE is a Java framework into which different components plugged. The unit-testing functions, the debugger, the code editor are all modules that plug into the Eclipse backplane.

Prior to version 3.0, Eclipse plug-ins used a proprietary interface to communicate with the framework. This approach had several shortcomings. The first was that Eclipse plug-in requirements were yet another plug-in specification. They were conceptually no different from those of a dozen other tools, but because their syntax was specific to Eclipse, they imposed on vendors a one-off implementation. The second limitation was that the plug-ins required the Eclipse environment to be restarted to load a new module.

With the advent of release 3.0, the Eclipse designers decided to solve both problems by adopting the Open Services Gateway Initiative (or OSGi) Reference platform plug-in architecture.

OSGi (www.osgi.org) is the brainchild of a group of vendors who wanted to standardize the way services would be provided to home devices. They first convened in 1999 and a year later released a draft of the specification they were pursuing. Their initial design provided a standardized way for set-top devices (like TV cable boxes and DSL modems) to be extended by discovering, loading and using new components. A year or so later, the consortium released an API for Java, the language on which the consortium standardized.

Integration Watch

In March 2003, the third—and latest—version of the OSGi Reference Platform was released. In the process, it provided all the services needed by a desktop plug-in environment such as an IDE, and so Eclipse was quick to adopt it.

A good way to view OSGi is as a container of sorts into which the functionality of plug-ins can be loaded as JAR files. The framework loads the code, which is called a bundle in OSGi parlance, enforces the security and other measures specified, then starts up the functionality specified in the bundle. When the code has completed, OSGi makes sure the bundle is closed down correctly and that the appropriate resources are returned to the system—in this case, the JVM.

If this sounds a lot like an EJB container with a client-side dimension, you're on the right track. However, OSGi lacks—and for this we bow in thanks—the sprawling complexity of J2EE and EJBs.

The OSGi model has four central pieces in addition to the modules themselves. The first piece is the execution environment that is inside the JVM. It is downward scalable enough that it can fit in a smart phone and robust enough to reside on a full enterprise server.

The next step is the modules layer, which handles the context in which bundles execute. Among the many things it does, it provides modules with their own classpath. As Java developers know, there is normally a single classpath that contains all the classes and resources. The modules layer adds private classes for a module (without placing them on the classpath where they could be accessed by other applications). It also controls linking between modules.

A life-cycle layer handles the management of modules, such as the loading, running and retiring of individual bundles. Bundles all have a common starting point (the equivalent of main() in Java and C++) from which other classes can then be loaded. This design, which is substantially different from the EJB component model, enables an orderly start, execution and termination to a bundle.

The final aspect of OSGi is a service registry. In a dynamic plug-in environment, it is folly to operate with the expectation that needed services are active. The service registry enables a bundle to inquire what services are available and running. Services in OSGi can be any Java class. OSGi provides numerous useful services, such as HTTP, Jini, Universal Plug and Play (UPnP) processing, XML parsing, logging and so forth. Security is provided by the Java security model.

In sum, OSGI provides a complete container for running multiple applications within the same JVM, as well as a simple component model that makes development easy. OSGi itself consists of a few JAR files that can be downloaded from the group's Web site. I think its appearance in Eclipse 3.0 is just the beginning of a much wider adoption—due to its clean, effective design and lack of complexity. ▮

Andrew Binstock is the principal analyst at Pacific Data Works LLC.

A Little Language Talk

A mini-theme of this column recently has been "little languages," solutions that may not combine the flexibility, familiarity and approachability that characterize (one hopes) mainstream languages, but that provide, within your particular area of interest, great advantages. The phrase "little languages" comes from one of the most influential articles of the 1980s, written by Jon Bentley in 1986. In it he showed how "examining programs under a linguistic light can give you a better understanding of the tools you now use, and can teach you design principles for building elegant interfaces to your future programs."

The article, available at portal.acm.org/citation.cfm?id=315691, presents elegant graphics-producing programs in a fraction of the space they'd require with any of today's mainstream languages. Although Bentley's article caused a sensation, "the linguistic light" was drowned out by the blazing arrival of event-driven GUIs, object-oriented programming and the World Wide Web.

A fundamental premise of .NET is that a platform that is explicitly designed to support multiple languages and programming approaches is superior to a platform, notably Java, whose design is dominated by the needs of a single language.

I am convinced that Microsoft is sincere in trying to give the .NET managed platform as much flexibility as possible, albeit for the purely mercenary purpose of being in a position to exploit advances as they enter the mainstream.

Whitehorse, IronPython, F#, XAML, Cω…these are hardly the "master in a day, implement in a few" languages proposed by Bentley. Cω, in particular, should not be attempted without first wrapping your head in duct tape so as to prevent your skull from exploding.

We'll revisit Cω in future columns; it's a fascinating language whose features may be incorporated in mainstream languages such as C# and VB.NET in the post-Longhorn time frame (emphasis on "may"), but for now suffice it to say that it's a language that integrates the worlds of objects, SQL and XML on the premise that programmers have to deal with all three anyway.

However, at OOPSLA in Vancouver, Microsoft announced an SDK for creating domain-specific languages and a toolkit powered by the Whitehorse visual designer. For those of us with a traditionalist bent toward text, Python and OCaml are particularly apt for implementing parsers. So Microsoft appears to be slipping all the blocks into place to support a resurgence in user-created little languages.

The great bugaboo of little languages is that a casually written interpreter is an efficiency nightmare. Bentley tells a story of an ATM that was overrunning its 28K of storage that was made three times more efficient by a switch to a little language interpreter. Yes, 28 kilobytes—and a processor that undoubtedly had a clock in the neighborhood of a single kilohertz. O, efficiency! When will we learn that the keys to running light and tight are held in our own hands?

My main concern with developing a little language in a corporate environment to express, say, pricing rules or customer-billing options, is that while it should ease the evolution of business rules expressed in the little language, the technical wherewithal to evolve the interpreter itself is a rare commodity. The only thing worse than having an unproductive team is having a team whose productivity depends on a single person.

I wish that the risk of embracing a little language could be entirely mitigated, but that's not the case. Implementing even a tiny language is likely to be tied in to the peculiarities of a tool set, even when using the best modern tools, and is likely to be "quirky" since language implementation is probably one of the most creative programming tasks that one can undertake. Also, even more than most corporate projects, the deliverables of a little language project must include large amounts of non-source-code artifacts (indeed, I would insist on unit tests that exercise a clean and automated build process from grammar change to runtime results).

On the other hand, Bentley's vision of a little language is one that can be implemented in a few days. Even assuming that's an optimistic time frame, a good team should be able to afford a little language prototype as long as they aren't simultaneously learning a new language and a new tool set.

The benefits of a little language can be dramatic—the type of highly visible project that delivers a true competitive edge. With the broad functionality of the Base Class Library, the approachable System.Reflection.Emit namespace, and the emerging options in implementation languages and tools, the time may have come to rekindle the linguistic light. ▮

Larry O'Brien is a technology consultant and analyst, and the founding editor of Software Development Magazine.

The Shopping Cart Steamrolls

Online retail sales are expected to grow to US$144 billion this year, according to shop.org, an arm of the National Retail Federation that monitors such things. If that's not staggering in its own right, consider that six years ago, in 1998, the first year shop.org tracked online retailing, sales were at $14.9 billion. And six years before that, it's safe to say, online retailing did not even exist.

Industry Watch

It is believed the first online transaction occurred 10 years ago this past August. Also 10 years ago, the World Wide Web Consortium came into being. That's the body most responsible for the standards and protocols upon which the Web is based. And after a slow start, there appears to be no stopping the shopping cart.

Part of the reason for the slow start was security—people at first did not trust the fact that their credit-card information would remain secure. They were scared by stories of hackers stealing their numbers literally out of thin air and running up huge charges. And remember the adult entertainment purveyors who were caught by the Federal Trade Commission for fraudulently billing credit cards and had to make some $30 million in restitution? In short, trust was not high.

Then there were issues with the Web itself. A medium designed for presenting pages now was being asked to show items in different colors and with different features, complete sales transactions, and connect vacationers with rental cars, flights and hotels. The presentation layer was rudimentary, there were reliability and compatibility issues, and the back-end hooks hadn't been written yet. Further, companies hadn't yet figured out a good model for what to sell, or how to sell it, because in their estimation, there just wasn't enough traffic on the Web to warrant significant investments in online retailing.

Once those hurdles were cleared through the use of industry standards regarding security, data access and Web application presentation, and through the innovative contributions of many of the dot-com companies that no longer exist today, significant numbers of people began to take advantage of staying home to shop. And businesses realized the importance of providing customers with a friendly, interactive experience.

Scott Silverman, executive director of shop.org, had a simpler explanation, though. "People just needed to get comfortable making a transaction a new way," he said.

Just as customers needed to grow into the idea of purchasing goods and services over their computer, businesses needed to get comfortable, too. "Our first Internet experience was on the supply side," said Rich Donaldson, a spokesman for outdoors clothing and equipment retailer L.L.Bean in Freeport, Maine. "We were using the Internet for product procurement right down to where the cotton is grown. And we saw how the Web would apply to the business."

Different types of businesses have used the Web in different ways. For brick-and-mortar retailers, the Web offered an opportunity to cut marketing, staffing and real estate costs while still offering a complete catalog of its goods. For hotels and airlines, it meant reducing call-center staffing dramatically and letting travelers choose their own flights and rooms. For mail-order companies, the Web cut mail and printing costs, and helped the companies truly zero in on their customers' purchasing habits.

L.L.Bean at first thought technological advances would simply result in putting its famous catalog onto a CD-ROM. Then, the company launched its Web site in 1995, and took its first live orders in 1996. "The pages on the Web at first were for people to browse but not to transact. We wanted it to reduce our dependency on paper," Donaldson explained.

Online transactions certainly are working now. This year, sales from the Web will make up 6.6 percent of all retail sales; that figure was 3.6 percent in 2002, according to the shop.org/Forrester Research report titled "The State of Retailing Online." Further, 79 percent of retailers reported positive operating margins from their Web businesses, while online sales now account for more than 5 percent of all sales in 12 retail categories, up from nine categories in 2003.

At L.L.Bean, the Web is the company's fastest growth channel, Donaldson said, and he expects Web sales to overtake catalog sales in the next year or two.

There is, however, an intrinsic value of the catalog as a resource, he added. "You don't have to plug it in, and it doesn't matter if you drop it, and it comes to your home. It's in your face as an important reminder." The goal for L.L.Bean, he said, is to split the business into thirds by channel: catalog, Web and stores.

It will be interesting to see in the next 10 years what standards will emerge, and how businesses will incorporate those standards into applications that bring in customers, satisfy them and increase the likelihood that they will, as the signs in the store windows say, "come back soon." ▮

NEXT: WHERE DO WE GO FROM HERE?

David Rubinstein is editor of SD Times.

BUSINESS BRIEFS

NOVELL, MICROSOFT SETTLE ONE, BEGIN FIGHT OVER ANOTHER

Novell Inc. and Microsoft Corp. last month agreed to settle claims regarding Novell's NetWare operating system for US$536 million, but Novell indicated it would go forward with another antitrust suit against Microsoft, claiming its WordPerfect software business was irreparably harmed.

"We are pleased that we have been able to resolve a portion of our pending legal issues with Microsoft," Joseph A. LaSala, Jr., Novell's senior vice president and general counsel, said in a statement. "This is a significant settlement, particularly since we were able to achieve our objectives without filing expensive litigation. While we have agreed to withdraw from the EU case, we think our involvement there has been useful, as it has assisted the European proceedings and facilitated a favorable settlement with Microsoft."

LaSala continued, "We regret that we cannot make a similar announcement regarding our antitrust claims associated with the WordPerfect business."

Novell is seeking unspecified damages because it claims Microsoft tried to eliminate competition by bundling its office productivity applications with the operating system, and is basing its suit on the U.S. government's successful case against Microsoft that showed Microsoft had a monopoly on PC desktop operating systems.

—David Rubinstein

Business performance management software vendor **Hyperion Solutions Corp.** and enterprise integration solutions company **MetaMatrix Inc.** have signed a partnership deal that will bring Hyperion's analytic and reporting capabilities to the MetaMatrix integration platform, creating more of an enterprise solution than MetaMatrix offered previously. The companies are working initially in the U.K. and in Ireland.

EARNINGS: BEA Systems Inc. reported revenue of US$264.4 million for its fiscal third quarter 2003, ended Oct. 31. That is a 5 percent increase from the same period a year ago. On a GAAP basis, BEA reported net income of $33.5 million for the quarter (8 cents per diluted share), up 15 percent from 2003. For the third quarter, BEA reported license revenue of $114.9 million, as compared with $128.2 million a year ago and $116.3 million in the second quarter. "Our top priority is to grow license revenue. We made significant progress during the quarter on several new business initiatives that are designed to drive new license revenue opportunities," Alfred Chuang, BEA's founder, chairman and CEO, said in a statement. ▮

CALENDAR OF EVENTS

Oracle OpenWorld — Dec. 5–10
San Francisco
ORACLE CORP.
www.oracle.com/openworld/sanfrancisco/conference

Software Test & Performance Conference — Dec. 7–9
Baltimore
BZ MEDIA LLC
www.stpcon.com

Macworld Conference & Expo — Jan. 10–14
San Francisco
IDG WORLD EXPO CORP.
www.macworldexpo.com/live/20

OSDL Enterprise Linux Summit — Jan. 31–Feb. 2
Burlingame, Calif.
OPEN SOURCE DEVELOPMENT LABS INC.
www.osdllinuxsummit.org

Web Services On Wall Street — Feb. 1–2
New York
FLAGG MANAGEMENT INC.
& LIGHTHOUSE PARTNERS INC.
www.webservicesonwallstreet.com

VSLive — Feb. 6–10
San Francisco
FAWCETTE TECHNICAL PUBLICATIONS
www.ftponline.com/conferences/vslive/2005/sf

LinuxWorld Conference & Expo — Feb. 14–17
Boston
IDG WORLD EXPO CORP.
www.linuxworldexpo.com

Web Services Edge 2005 East — Feb. 15–17
Boston
SYS-CON MEDIA INC.
sys-con.com/edge2005east

SHARE — Feb. 27–March 4
Anaheim
IBM CORP.
www.share.org

EclipseCon — Feb. 28–March 3
Burlingame, Calif.
ECLIPSE.ORG
www.eclipse.org/eclipsecon2005/eclipsecon.html

Embedded Systems Conference — March 6–10
San Francisco
CMP MEDIA LLC
www.esconline.com/sf/index.htm

Developer Relations Conference — March 7–8
San Jose
EVANS DATA CORP.
www.evansdata.com/drc

For a more complete calendar of U.S. software development events, see www.bzmedia.com/calendar.

Information is subject to change. Send news about upcoming events to events@bzmedia.com.

SD TIMES WEB SEMINARS

From File Box To Sarbox — Dec. 8
Time: 10 a.m. Pacific (1 p.m. Eastern)
SERENA SOFTWARE INC. AND SD TIMES
sdtimes.unisfair.com

For a more complete calendar of SD Times Web Seminars, see www.sdtimes.com/seminar.htm.

Registration is free.

Software Development Times (ISSN #1528-1965, USPS #001-9625) is published 24 times a year by BZ Media LLC, 7 High Street, Huntington, NY 11743. Periodicals postage paid at Huntington, NY and additional offices. POSTMASTER: Send address changes to SD Times, 7 High Street, Huntington, NY 11743. SD Times is a registered trademark of BZ Media LLC.

The Fastest and Easiest Way to Deliver Feature-Rich .NET Framework Solutions to Your Customers

Developer Express technologies help you build your best, reduce the amount of code you write, increase your productivity, and create stunning applications for Windows® and the Web in the shortest possible time...

To learn more about our tools and how they can significantly impact your bottom-line visit us online at www.devexpress.com

Productivity Tools

CodeRush is a powerful editor add-in for Visual Studio® .NET. Create more code with fewer keystrokes, see complex software with clarity, and design forms with ease. Say goodbye to drudgery and get ready to become the programming superhero that you always knew you could be.

Reporting

A comprehensive reporting platform for Windows® and the Web, XtraReports is fully integrated into the Visual Studio® .NET IDE and sets the standard for ease-of-use and flexibility. With XtraReports, you never have to cringe at the thought of having to design a report again!

Visual Components

To build stunning and flexible applications, you need feature complete components... Ones that work as expected, each and every time. Our complete range of visual components will help you emulate today's most popular UIs without hassles or aggravation. Like all of our tools, our components were written in Visual C#™ and fully optimized for the .NET Framework and all .NET languages.

Application Development Framework

XPO represents a powerful bridge between the true object world and relational databases. It gives developers the freedom to build true business objects without having to deal with the tedious complexities of mapping them onto individual database tables.

Developer EXPRESS

(888) Go-DevEx
(702) 262-0609
www.devexpress.com

What will happen when X leads to Y? Is Y a place it can even get to? Predictability is about making an educated, albeit blind guess, right? Not necessarily. Enter Serena: Conquering the unknown with the industry's most complete line of change management software. You'll be able to say "The unexpected? Yeah, I totally saw that coming." The new leader in change management is here, increasing your predictability.

serena

From the makers of TeamTrack®, ChangeMan®, Dimensions™, and PVCS® comes a new level of predictability. Learn more at serena.com/predictability